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Review of the pipefishes and seahorses (Teleostei: Syngnathidae) of New Caledonia, with descriptions of five new species

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Abstract

The pipefishes and seahorses (Syngnathidae) of New Caledonia are reviewed. A total of 15 genera and 43 species of Syngnathidae is recognised to occur in New Caledonian waters, including nine new records from the area. Also included are three new records from the Chesterfield Islands, ten new records from Grande Terre, three new records from the Île des Pins, and seven new records from the Loyalty Islands. A key to the Syngnathidae of New Caledonia is presented. Five new species are described: *Festucalex kulbickii* **n. sp.** from the Chesterfield Islands and Grande Terre; *Hippocampus curvicuspis* **n. sp.** from Grande Terre; *H. pusillus* **n. sp.** from Lifou, Loyalty Islands and Grand Passage/northern Grande Terre Group; *Micrognathus brevicorpus* **n. sp.** from southern Grande Terre; *Siokunichthys striatus* **n. sp.** from Grande Terre. *Hippocampus semispinosus* Kuiter, 2001 is redescribed on the basis of an additional specimen from New Caledonia.
Keywords: Pipefishes, seahorses, Syngnathidae, New Caledonia, distribution, new species, new records.

Zusammenfassung

Die Seenadeln und Seepferdchen der Familie Syngnathidae aus Neukaledonien werden revidiert. Insgesamt sind 43 Arten in 15 Gattungen aus neukaledonischen Gewässern bekannt, darunter neun Neufunde für dieses Gebiet. Von den Chesterfield-Inseln werden drei Arten erstmals gemeldet, von Grande Terre zehn Arten, von der Île des Pins drei Arten und von den Loyalty-Inseln sieben Arten. Die vorliegende Arbeit enthält einen Bestimmungsschlüssel der Syngnathidae Neukaledoniens. Fünf neue Arten werden beschrieben: *Festucalex kulbickii* **n. sp.** von den Chesterfield-Inseln und Grande Terre; *Hippocampus curvicuspis* **n. sp.** aus Grande Terre; *H. pusillus* **n. sp.** aus Lifou/Loyalty-Inseln und der Grand Passage/nördliche Grande-Terre-Gruppe; *Micrognathus brevicorpus* **n. sp.** aus dem südlichen Grande Terre; *Siokunichthys striatus* **n. sp.** aus Grande Terre. *Hippocampus semispinosus* Kuiter, 2001 wird erneut aufgrund der Basis eines neukaledonischen Exemplars beschrieben.

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1 Introduction

The fishes of the family Syngnathidae, including pipefishes and seahorses, are characterised by the presence of lobate gills, a pore-like gill opening located above

Tab. 1. Checklist of the species of the family Syngnathidae in New Caledonia. – Abbreviations: CH = Chesterfield Islands; GT = Grande Terre; LI = Loyalty Islands; PI = Île des Pins. – New records are printed in **bold face.**

Species	Distribution in New Caledonia	First record
Acentronura breviperula	GT	**present paper**
***Corythoichthys* sp.** (Brown-banded redtail pipefish)	GT	**present paper**
Corythoichthys conspicillatus	GT, LI	Fourmanoir 1976
C. haematopterus	CH, GT	Fourmanoir 1971
C. intestinalis	CH, GT, LI	Fourmanoir & Laboute 1976
C. nigripectus	CH, GT, LI	Rivaton et al. 1989
C. ocellatus	GT	Laboute & Grandperrin 2000
C. paxtoni	CH	Kulbicki et al. 1994
C. schultzi	CH, GT, LI	Dawson 1985
Cosmocampus banneri	GT	Dawson 1985
Doryrhamphus melanopleura	CH, GT, PI, LI	**present paper**
Dunckerocampus chapmani	GT, PI	Herald in Schultz et al. 1953
D. dactyliophorus	CH, GT, LI	Günther 1910
***Festucalex kulbickii* n. sp.**	CH, GT	**present paper**
F. wassi	GT	Rivaton et al. 1989
Halicampus boothae	CH	Kulbicki et al. 1994
H. brocki	GT?	Rivaton et al. 1989
H. dunckeri	CH, GT	Rivaton et al. 1989
H. mataafae	CH	Kulbicki et al. 1994
H. nitidus	GT, LI	Dawson 1985
H. spinirostris	GT	**present paper**
Hippichthys spicifer	GT	Dawson 1985
Hippocampus bargibanti	GT	Whitley 1970
***H. curvicuspis* n. sp**	CH, GT	**present paper**
***H. pusillus* n. sp.**	GT, LI	**present paper**
H. semispinosus	GT	**present paper**
H. taeniopterus	GT	**present paper**
***Micrognathus brevicorpus* n. sp**	GT	**present paper**
M. micronotopterus	GT	**present paper**
M. natans	GT	Dawson 1985
M. pygmaeus	CH, GT, PI	Dawson 1985
Microphis argulus	CH	Rivaton et al. 1989
M. brachyurus	GT	Duncker 1915
M. brevidorsalis	GT	**present paper**
M. cruentus	GT	Dawson & Fourmanoir 1981
M. leiaspis	GT	Dawson 1985
M. retzii	GT	Marquet et al. 2003
Phoxocampus belcheri	GT	Plessis & Fourmanoir 1966
P. diacanthus	GT, LI	Dawson 1985
Siokunichthys herrei	GT	**present paper**
***S. striatus* n. sp.**	GT	**present paper**
Syngnathoides biaculeatus	GT	Jouan 1863
Trachyrhamphus bicoarctatus	GT	Dawson 1982b

the opercle, by the absence of pelvic fins and true jaw teeth, the body protected by a ring-like arrangement of dermal plates, and by other specialised features (Dawson 1985). They are cosmopolitan in distribution from 71° N to 56° S. Most species are found in estuarine and coastal marine areas, but some species live in fresh and brack-

Tab. 2. Checklist of the Syngnathidae known from the Chesterfield Islands. – New records are printed in **bold face**.

Species	First record from Chesterfield Islands
Corythoichthys haematopterus	Kulbicki et al. 1994
C. intestinalis	Rivaton 1989
C. nigripectus	**present paper**
C. paxtoni	Kulbicki et al. 1994
C. schultzi	Kulbicki et al. 1994
Doryrhamphus melanopleura	**present paper**
Dunckerocampus dactyliophorus	Kulbicki et al. 1994
***Festucalex kulbickii* n. sp.**	**present paper**
Halicampus boothae	Kulbicki et al. 1994
H. dunckeri	Kulbicki et al. 1994
H. mataafae	Kulbicki et al. 1994
***Hippocampus curvicuspis* n. sp.**	**present paper**
Micrognathus pygmaeus	**present paper**
Microphis argulus	Rivaton et al. 1989

ish water. In the ocean, syngnathids are found from depths of a few centimetres including tidal pools, down to more than 400 m depth; planktonic species may occur hundreds of kilometres offshore and over depths of several thousands of metres.

Some pipefishes mature at 20–25 mm, while the maximum length is known to exceed 650 mm (Dawson 1985). Seahorses reach a maximum of 350 mm body height. Most pipefishes and seahorses feed on microcrustaceans (e. g. copepods, mysids, cumaceans), and many appear to have a lifespan of less than two years. Seahorses and some pipefishes have been used in the preparation of medicines and aphrodisiacs, especially in China; thus many species are highly threatened. Species living in seagrass beds are also threatened by trawling for fisheries; coral reef species are endangered by coral reef destruction and coral bleaching worldwide.

Indo-Pacific pipefishes have been reviewed by several authors, beginning with Kaup (1853, 1856). Duncker (1915) started a revision of the Syngnathidae, which was never completed. Weber & Beaufort (1922) compiled descriptions of the species of Indonesia; Herald in Schultz et al. (1953) revised the species of the Marshall and Mariana Islands, but also included descriptions of species from other parts of the Pacific. Finally, Dawson (1985) presented a revision of Indo-Pacific Syngnathidae, excluding the seahorses of the genus *Hippocampus*. In his revision, he included 47 genera, 175 species and 7 subspecies. The seahorses (genus *Hippocampus*) were revised by Lourie et al. (1999), who distinguished 32 valid species. Seahorses are now worldwide protected; they are for example listed under CITES.

Kuiter (2000) published a comprehensive guide to Syngnathiformes, including live colour photos of most species. In this guide, he suggested several new taxonomical combinations, and splitted a number of Dawson's pipefish species and Lourie's et al. seahorse species. Kuiter (1998) revised the pipefishes of the genus *Dunckerocampus* and described a new species from the Indian Ocean. Kuiter (2001) revised the Australian seahorse species of the genus *Hippocampus* including the descriptions of nine new species. An additional species of seahorse from Lord Howe Island was described by Kuiter (2003).

Tab. 3. Checklist of the Syngnathidae known from Grande Terre. – Abbreviations: N = Province Nord; S = Province Sud. – New records are printed in **bold face**.

Species	Provinces	First record from Grande Terre
Acentronura breviperula	N, S	**present paper**
***Corythoichthys* sp.**	S	**present paper**
Corythoichthys conspicillatus	S	Fowler 1928
C. haematopterus	N, S	Fourmanoir 1971
C. intestinalis	S	Fourmanoir & Laboute 1976
C. nigripectus	S	Rivaton et al. 1989
C. ocellatus	S	Laboute & Grandperrin 2000
C. schultzi	N, S	Dawson 1985
Cosmocampus banneri	S	Dawson 1985
Doryrhamphus melanopleura	N, S	**present paper**
Dunckerocampus chapmani	S	Herald in Schultz et al. 1953
D. dactyliophorus	S	Günther 1910
***Festucalex kulbickii* n. sp.**	N, S	**present paper**
F. wassi	S	Rivaton et al. 1989
Halicampus brocki	S?	Rivaton et al. 1989
H. dunckeri	S	Rivaton et al. 1989
H. nitidus	S	Dawson 1985
H. spinirostris	N, S	**present paper**
Hippichthys spicifer	S	Dawson 1985
Hippocampus bargibanti	S	Whitley 1970
***H. curvicuspis* n. sp.**	S	**present paper**
***H. lifousensis* n. sp.**	N	**present paper**
H. semispinosus	S	**present paper**
H. taeniopterus	S?	**present paper**
***Micrognathus brevicorpus* n. sp.**	S	**present paper**
M. micronotopterus	S	**present paper**
M. natans	S	Dawson 1985
M. pygmaeus	N, S	Dawson 1985
Microphis brachyurus	N, S	Duncker 1915
M. brevidorsalis	S	**present paper**
M. cruentus	S	Dawson & Fourmanoir 1981
M. leiaspis	N	Dawson 1985
M. retzii	N	Marquet et al. 2003
Phoxocampus belcheri	S	Plessis & Fourmanoir 1966
P. diacanthus	S	Dawson 1985
Siokunichthys herrei	N	**present paper**
***S. striatus* n. sp.**	S	**present paper**
Syngnathoides biaculeatus	N, S	Jouan 1863
Trachyrhamphus bicoarctatus	N, S	Dawson 1982b

New Caledonia is a French Overseas Territory in the Southwest Pacific (Fig. 1). The territory includes the Chesterfield Islands in the eastern Coral Sea, the Grande Terre Group with the Îles Bélep in the north, the main island Grande Terre in the centre and the Île des Pins in the south, the Loyalty Islands with the main islands Ouvéa, Lifou and Maré, and the small volcanic islands Matthew and Hunter on the Vanuatu-Fiji Ridge. The main island is politically and geographically separated in the Provinces Nord and Sud, including the warmer northern and the cooler southern province. Each of the island groups is isolated from the others by a deep sea basin.

Tab. 4. Checklist of the Syngnathidae known from the Île des Pins. – New records are printed in **bold face**.

Species	First record from Île des Pins
Doryrhamphus melanopleura	**present paper**
Dunckerocampus chapmani	**present paper**
Micrognathus pygmaeus	**present paper**

Tab. 5. Checklist of the Syngnathidae known from the Loyalty Islands. – New records are printed in **bold face**.

Species	Distribution			First record from Loyalty Islands
	Ouvéa	Lifou	Maré	
Corythoichthys conspicillatus	X	–	–	**present paper**
C. intestinalis	?	?	?	Dawson 1985
C. nigripectus	X	–	–	**present paper**
C. schultzi	X	–	–	**present paper**
Doryrhamphus melanopleura	X	X	X	**present paper**
Dunckerocampus dactyliophorus	X	–	–	**present paper**
Halicampus nitidus	X	–	–	**present paper**
Hippocampus pusillus **n. sp.**	–	X	–	**present paper**
Phoxocampus diacanthus	X	–	–	**present paper**

The collection of new material from New Caledonia using trawl, dredge, rotenone and other methods gives now the opportunity to continue research on Southwest Pacific Syngnathidae. During the present study, 394 specimens of syngnathid fishes from New Caledonia and adjacent areas in the Southwest Pacific were examined. The present paper recognises a total of 15 genera and 43 species of Syngnathidae occurring in New Caledonian waters (Tab. 1), including nine new records from the area and the descriptions of five new species. The paper also includes three new records from the Chesterfield Islands (Tab. 2), ten new records from Grande Terre (Tab. 3), three new records from the Île des Pins (Tab. 4), and seven new records from the Loyalty Islands (Tab. 5).

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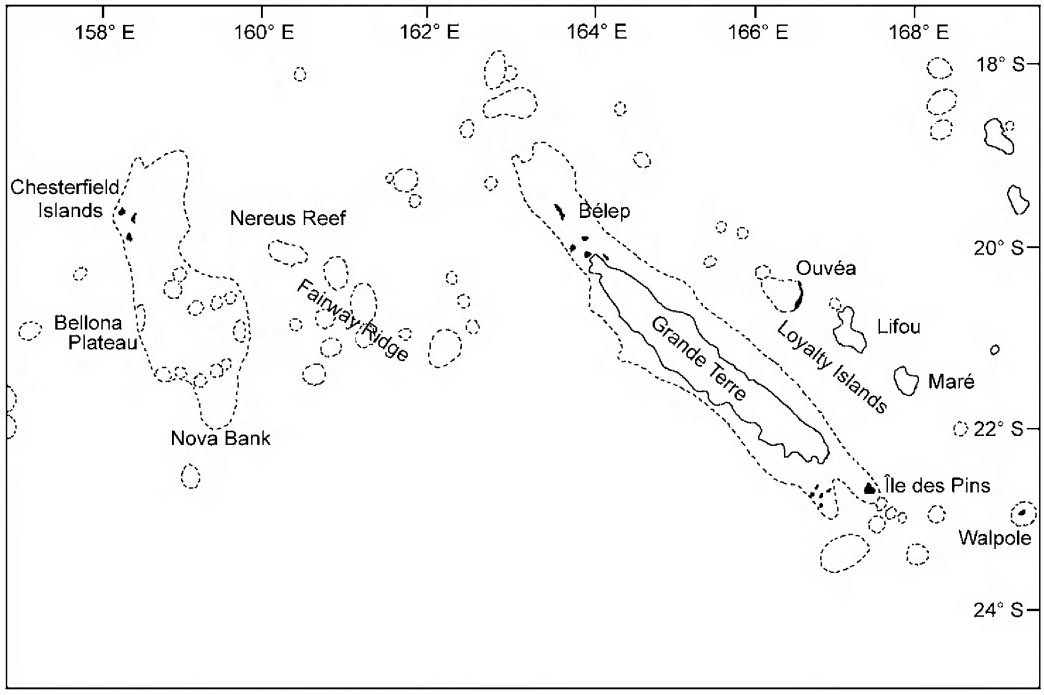

Fig. 1. Oceanic areas of New Caledonia.

(RMNH, Leiden); J. Finan, S. Jewett, G. D. Johnson, K. Murphy, L. Palmer, D. G. Smith, V. G. Springer, J. T. Williams (USNM, Washington D.C.); G. R. Allen, J. B. Hutchins (WAM, Perth).

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2 Methods and materials

2.1 Methods

Methods for the description of species of *Hippocampus* follow Kuiter (2001: 295–297), those for the description of other syngnathids are based on Dawson (1985: 4–7). The standard length, measured from the tip of the snout to the caudal fin base, is abbreviated as "SL"; the total length, measured from the tip of the snout to the end of the caudal fin, as "TL". In the genus *Hippocampus*, where the head is strongly angled ventrad and no standard or total lengths can be taken, the body height is measured from the coronet to the end of the straightened tail. Counts of fin rays follow Fricke (1983).

The key to the Syngnathidae of New Caledonia uses elements of Dawson (1985), Kuiter (2001) and other authors, but has been adapted and modified, and additional species have been added.

2.2 Materials

All specimens in collections available from New Caledonia, and additional material from the Southwest Pacific, was examined in the course of the present study. Fish specimens deposited in the following institutions were examined:

AMS	The Australian Museum, Sydney, Australia
BMNH	Natural History Museum, London, Great Britain [formerly British Museum (Natural History)]

BPBM Bernice P. Bishop Museum, Honolulu, U.S.A.
CAS California Academy of Sciences, San Francisco, U.S.A.
FMNH Field Museum of Natural History, Chicago, U.S.A.
GCRL Gulf Coast Research Laboratory Museum, Ocean Springs, Mississippi, U.S.A.
IRDNC Institut de Recherche pour le Développement (formerly O.R.S.T.O.M., Office de la Recherche Scientifique et Technique Outre-Mer), Fish Collection, Nouméa, New Caledonia (collection has no permanent status and will be later transfered to MNHN according to G. Duhamel, personal communication, 2004)
MNHN Muséum National d'Histoire Naturelle, Paris, France
NMNZ Museum of New Zealand Te Papa Tongarewa, Wellington (formerly Dominion Museum, then National Museum of New Zealand)
NMV National Museum of Victoria, Melbourne, Victoria, Australia
RMNH Nationaal Naturhistorisch Museum (formerly Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands
SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany
SU Stanford University Collection, deposited in California Academy of Sciences, San Francisco, U.S.A.
USNM National Museum of Natural History, Smithsonian Institution, Washington D.C., U.S.A.
WAM Western Australian Museum, Perth, Australia
ZMA Zoölogisch Museum, Universiteit van Amsterdam, Amsterdam, The Netherlands

3 New Caledonian Syngnathidae

3.1 *Acentronura breviperula* Fraser-Brunner & Whitley, 1949

Short-pouch pygmy pipehorse

Acentronura breviperula Fraser-Brunner & Whitley, 1949: Fraser-Brunner & Whitley 1949: 148, fig. 1 (Mabuiag, Torres Strait, Queensland, Australia; holotype: BMNH 1890.1.14.51). – Kuiter 2000: 63, figs. A–E (review; West Pacific; etc.).
Acentronura sp.: Dawson 1985: 15 (Nouméa, New Caledonia, at 30 m depth; on *Caulerpa* sp.).
Acentronura tentaculata (non Günther, 1870): Rivaton et al. 1989: 73 (Nouvelle-Calédonie/New Caledonia, in checklist).
Acentronura australe (non Waite & Hale, 1921): Rivaton et al. 1989: 73 (Nouvelle-Calédonie/New Caledonia, in checklist).
Acentronura gracilissima (non Temminck & Schlegel, 1850): Rivaton et al. 1989: 73 (Nouvelle-Calédonie/New Caledonia, in checklist). – Myers 1999: 89 (part: New Caledonia).
Halicampus sp.: Laboute & Grandperrin 2000: 157, figs. (Nouvelle-Calédonie/Grande Terre, New Caledonia).
Hippocampus sp.: Laboute & Grandperrin 2000: 159, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia).

Material

Total: 6 specimens.

New Caledonia, Grande Terre, Province Nord: SMNS 21760, 1 specimen; NW lagoon, 20°43′00″S 164°16′48″E, 10 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG12, St. DW.934; 27 Apr. 1988. — **New Caledonia, Grande Terre, Province Sud**: MNHN 2004-2014 (ex SMNS 21761), 1 specimen; 22°17′12″S 166°19′54″E, 20 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG12; 24 May 1984. – SMNS 21766, 1 specimen; 22°42′48″S 165°45′12″E, 38 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG6, St. DW.306; 27 Nov. 1984. – SMNS 21767, 1 specimen; 22°25′00″S 166°59′36″E, 47 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG4, St. DW.244; 23 Oct. 1984. – SMNS 21776, 1 specimen; 22°32′36″S 166°34′36″E, 15 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.100; 21 Aug. 1984.

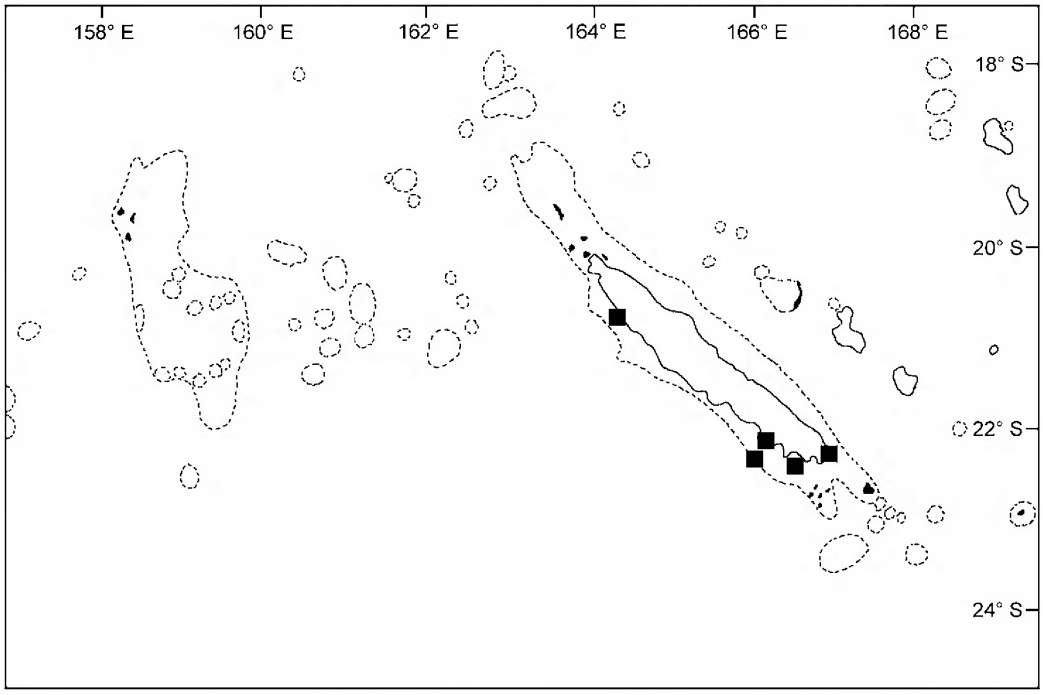

Fig. 2. Geographical distribution of *Acentronura breviperula* in New Caledonian waters.

SW Pacific comparison material. **Australia, Queensland**: BMNH 1890.1.14.51, holotype of *Acentronura breviperula* Fraser-Brunner & Whitley; Torres Strait.

Distribution

New Caledonia (Grande Terre) (Fig. 2). Outside the area, Indonesia and Philippines south to Torres Strait and northern Great Barrier Reef. This species lives on small and sparse seagrass that grows adjacent to reefs (Kuiter 2000: 63), at depths of 1–47 m.

3.2 *Corythoichthys* sp. (Fig. 3)

Brown-banded redtail pipefish

Corythoichthys amplexus (non Dawson & Randall, 1975): Dawson 1985: 38–39 (part; revision; Grande Terre, New Caledonia, in distribution map; etc.). – Rivaton et al. 1989: 73 (Nouvelle-Calédonie/New Caledonia, in checklist). – Thollot 1996a: 9 (south-west lagoon of Grande Terre, New Caledonia). – Thollot 1996b: 281 (lagon sud-ouest/SW lagoon, Grande Terre, New Caledonia). – Laboute & Grandperrin 2000: 154, fig. (Nouvelle-Calédonie/New Caledonia).

Corythoichthys sp. 3: Kuiter 2000: 106, figs. A–F (West Pacific from southern Japan to southern Great Barrier Reef, Australia).

Material

Total: 5 specimens.

New Caledonia, Grande Terre, Province Sud: SMNS 21769, 2 males, 80.7–82.3 mm SL and 2 females, 76.6–80.7 mm SL; Île Kouaré, Grand Récif Sud, 22°46′42″S 166°47′36″E, 15 m depth; M. Kulbicki & R/V 'Vauban', Cruise POISSONS LAGON, St. 9; 17 June 1986. –

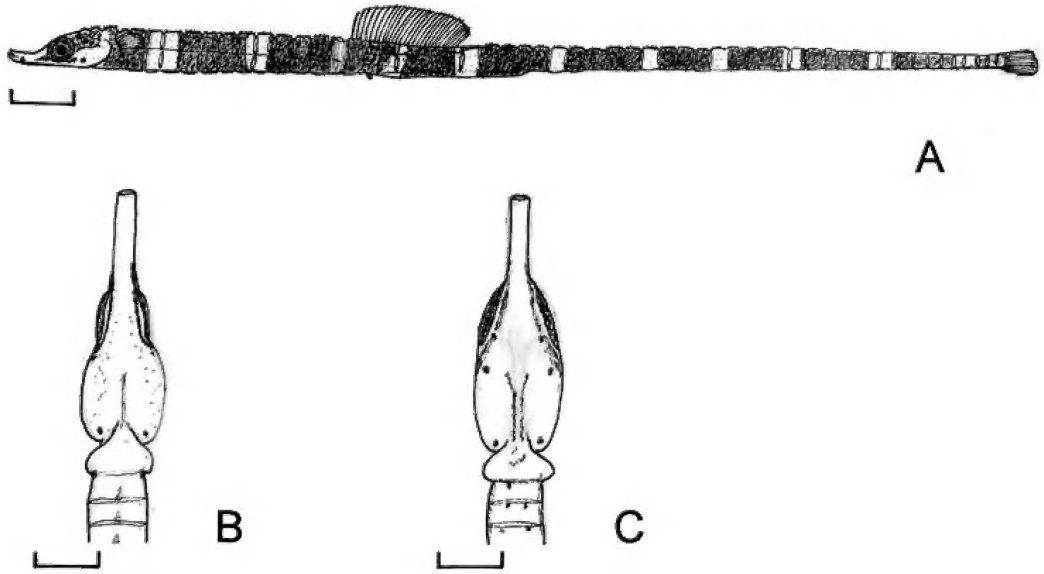

Fig. 3. *Corythoichthys* sp., brown-banded redtail pipefish; SMNS 21769; Île Kouaré, Grand Récif Sud, New Caledonia. – **A**, **B**. Male, 80.7 mm SL. **A**. Lateral view (scale: 5 mm). **B**. Head, ventral view (scale: 3 mm). – **C**. Female, 80.7 mm SL, Head, ventral view (scale: 3 mm).

SMNS 21735, 1 female, 72.5+ mm SL (parts of tail missing); Sêche Croissant Reef, 22°20′20″S 166°22′30″E, 2 m depth, *Sargassum* and sand; M. KULBICKI; 1 Aug. 1996.

Diagnosis

A species of *Corythoichthys* with elevated and denticulate dorsal head and trunk ridges, 13–17 pectoral fin rays (mean 15.0), 28–34 dorsal fin rays (mean 30.8), 14–15 + 38–41 body rings (total 52–55), snout length 2.6–2.8 in head length, snout depth 9.8–14.6 in head length, 6.0–7.0 subdorsal rings, the body pale, with broad plain dark brown bars, and the tail including caudal fin bright red in life.

Description

D xxviii–xxxiv; A iv; P xiii–xvii; C x. Trunk rings 14–15; tail rings 38–41; total rings 52–55; subdorsal rings 0 + 6–7; total subdorsal rings 6–7.

Head 9.4–10.3 in SL (9.7–10.6 % of SL). Median dorsal snout ridge low, entire, not strongly elevated, without bony knobs or spines, not confluent with orbital ridges. Other median dorsal head ridges distinct, forming three elevated crests, margins denticulate. Opercle with a complete longitudinal ridge. Supraopercular ridge present. Snout length 2.6–2.8 in head length (3.8–4.1 % of SL). Snout depth 9.8–14.6 in head length (0.7–1.0 % of SL). Eye diameter 3.7–4.5 in head length (2.4–2.6 % of SL).

Superior trunk and tail ridges discontinuous. Lateral trunk ridge straight, ends near anal ring. Inferior trunk and tail ridges continuous. Principal body ridges distinct, distinctly notched between rings, the margins dorsally denticulate, otherwise entire. Dermal flaps absent. Body depth 30.6–33.6 in SL (3.0–3.4 % of SL). Body width 35.0–40.3 in SL (2.5–2.8 % of SL). Preanus length 2.7–2.8 in SL (35.0–37.0 % of SL).

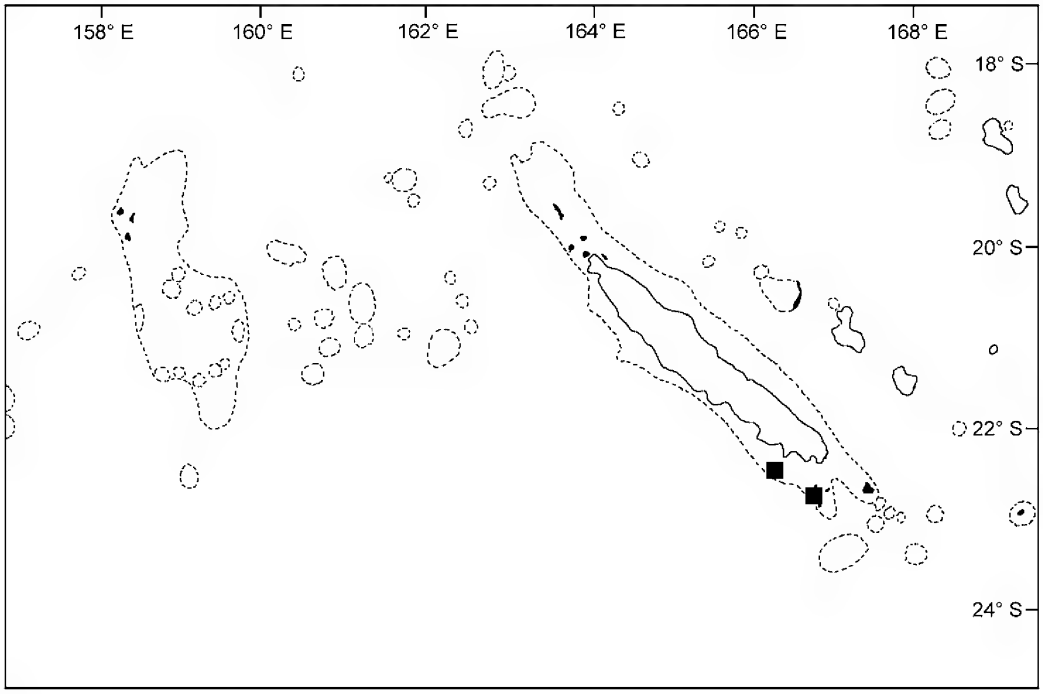

Fig. 4. Geographical distribution of *C.* sp. (Brown-banded redtail pipefish) in New Caledonian waters.

Dorsal fin origin above anus; dorsal fin base not elevated. Dorsal fin base length 9.5–10.8 in SL (9.3–10.5 % of SL). Predorsal length 2.7–2.9 in SL (34.6–37.0 % of SL). Pectoral fin length 47.5–57.6 in SL (1.7–2.1 % of SL). Prepectoral length 8.7–9.1 in SL (11.0–11.5 % of SL). Caudal fin length 26.0–36.6 in SL (2.7–3.8 % of SL).

Colour in life (after Laboute & Grandperrin 2000: 154, fig.): Head pale, with an oblique dark brown eye mask. Anterior section of head and snout dorsally white, tip of snout bright red. Trunk and tail pale reddish, with broad dark brown bands (covering 3–4 rings each; pale reddish interspaces covering 1–1.5 rings each). Rings on dark brown bands with pale notches. The dark brown bands gradually turn to bright red on posterior tail. Caudal fin bright red.

Colour in alcohol: Head and body pale whitish, with about 12 broad dark brown bands (the posterior 3 bands indistinct). Eye dark grey. Head and anterior trunk with a few dark spots ventrally (pattern see Fig. 3B–C); a spot on each side ventrally behind eye and on lower opercle always present. Fins pale.

Distribution

New Caledonia (Grande Terre) (Fig. 4). Outside the area, Indonesia to New Britain, north to Ryukyu Islands, south to Great Barrier Reef/Queensland, Australia. This species lives secretive on sheltered coral reefs, at depths of 0.2–20 m.

Comparisons

This unnamed species is very similar to *Corythoichthys amplexus* Dawson & Randall, 1975 (Dawson & Randall 1975: 271, figs. 6–7, Beqa Lagoon/Fiji, holotype

USNM 213479; Dawson 1977a: 303–306, fig. 3, part: Fiji), but differs in its tail which is bright red in life (dark brown with pale bands in *C. amplexus*), its plain dark brown body bars (bars with broad grey interspaces in *C. amplexus*), the 38–41 tail rings (35–39 in *C. amplexus*), the total of 52–55 tail rings (50–54 in *C. amplexus*), the 6.0–7.0 subdorsal rings (4.5–6.25 in *C. amplexus*), the 28–34 dorsal rays with a mean of 30.8 (23–30, mean 26.6 in *C. amplexus*), and the 13–17 pectoral rays with a mean of 15.0 (12–15 pectoral fin rays, mean 13.7 in *C. amplexus*).

Remarks

This species is widely distributed in the tropical western Pacific judging from underwater photographs taken in the Ryukyu Islands, Flores/Indonesia, Great Barrier Reef/Queensland, Australia, and Milne Bay/Papua New Guinea (some of these were published by Kuiter 2000: 106, figs. A–F, *Corythoichthys* sp. 3).

The brown-banded redtail pipefish is unnamed, but a revision of the *Corythoichthys-amplexus*-complex is necessary for formal description and diagnosis of the taxonomic status of the species and an analysis of the relationships to other species in the complex.

3.3 *Corythoichthys conspicillatus* (Jenyns, 1842)

Reticulated pipefish

Syngnathus conspicillatus Jenyns, 1842: Jenyns 1842: 147, pl. 27, fig. 4 (Tahiti/Society Islands; holotype: BMNH 1917.7.14.27). – Günther 1910: 430–431, pl. 167, fig. B (Samoa/Western Samoa).

Corythoichthys conspicillatus: Fowler 1928: 114 (Port of France/Nouméa, Grande Terre, New Caledonia; Tahiti/Society Islands; Suva/Fiji; Paumotu/Tuamotu Archipelago; Apia/Upolu, Western Samoa; Faté/Éfaté, Vanuatu; etc.). – Fowler 1931: 324 (Viti Islands/Fiji). – Kuiter 2000: 108, figs. A–B (review; Coral Sea to Central Pacific).

Corythoichthys flavofasciatus (non Rüppell, 1838): Fowler 1934: 397 (Bougainville, New Britain/Papua New Guinea; Fiji; Malakula, Vila/Vanuatu; Guadalcanar/Guadalcanal, Solomon Islands; etc.). – Fourmanoir 1971: 112 (Nouvelle-Calédonie/Grande Terre; New Caledonia). – Paulus 1999: 2273, fig. (review; widespread in SW Pacific, east to Tuamotu Archipelago; etc.; in distribution map).

Corythoichthys flavofasciatus conspicillatus: Fourmanoir 1976: 49 (St. Vincent/Saint-Vincent, Grande Terre, New Caledonia).

Material

Total: 8 specimens.

New Caledonia, Grande Terre, Province Sud: MNHN 1980-0229, 1 specimen; P. Fourmanoir; 1970. – MNHN 2004-2015 (ex SMNS 19772), 1 specimen, 73.3 mm SL; 1 km E Saint-Gabriel, 12 km ESE Thio, 21°38′57″S 166°18′31″E, fringing reef, surge channel with caves, live corals, gravel, 0–8.5 m depth; R. Fricke; 9 Nov. 1997. – SMNS 19409, 1 specimen, 70.2 mm SL; Baie Chambeyron, Presqu'île de Ouano (Plage Ouano), 26 km W Boulouparis, 100 km NW Nouméa, 21°51′38″S 165°48′24″E, lagoon, sand and silt, seagrass, patches of live coral, 0.3–0.9 m depth at low tide; R. Fricke; 13 Nov. 1997. – SMNS 19772, 1 specimen, 81.7 mm SL; same data as MNHN 2004-2015. – SMNS 21736, 1 specimen, 75.9+ mm SL; Sêche Croissant Reef, 22°20′20″S 166°22′30″E, 2 m depth, *Sargassum* and sand; M. Kulbicki; 1 Aug. 1996. — **Loyalty Islands**: IRDNC uncat., 1 specimen, 60.1 mm SL; Ouvéa Atoll, 20°29′12″S 166°19′18″E, 7 m depth; J. T. Williams & R/V 'Alis', Cruise UVEA3; 19 Nov. 1991. – SMNS 21734, 2 specimens, 60.5–66.5 mm SL; same data as IRDNC uncat.

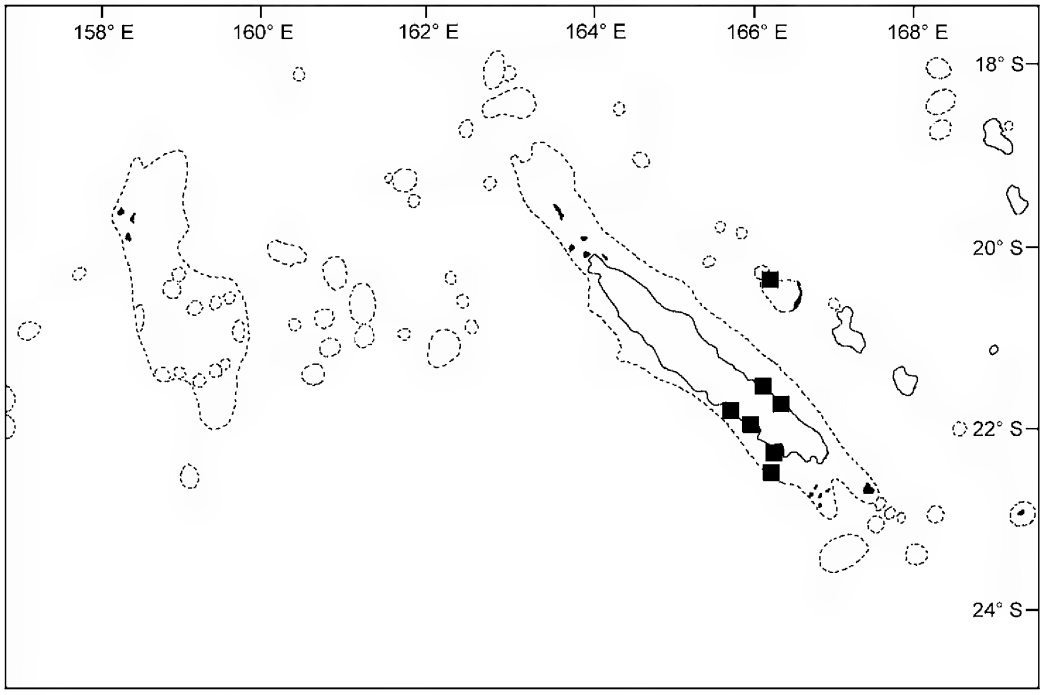

Fig. 5. Geographical distribution of *C. conspicillatus* in New Caledonian waters.

Distribution

New Caledonia (Grande Terre) (Fig. 5); Loyalty Islands (Ouvéa). Queensland/Australia east to Society Islands and Tuamotu Archipelago. Solomon Islands; Vanuatu; Rotuma; Viti Levu/Fiji; Western Samoa. This species lives on coral reefs at depths of 0–10 m.

3.4 *Corythoichthys haematopterus* (Bleeker, 1851)

Bloodspot pipefish; reeftop pipefish

Syngnathus haematopterus Bleeker, 1851: Bleeker 1851: 258–259 (Banda Neira/Bandaneira, Maluku, Indonesia; in mari; 3 specimens, 183–185 mm TL; lectotype: RMNH 27442, as designated by Dawson 1977a: 330). – Günther 1910: 431, pl. 167, fig. C (part: Aneiteum/Aneityum, Vanuatu; etc.).

Corythoichthys haematopterus: Fourmanoir 1971: 112 (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Dawson 1985: 40–41 (revision; Grande Terre, New Caledonia, in distribution map). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 19 m depth). – Larson & Williams 1997: 351 (Darwin Harbour, Northern Territory, Australia). – Fricke 1999: 148 (New Caledonia; etc.). – Paulus 1999: 2273, fig. (review; SW Pacific, east to Vanuatu; in distribution map; etc.). – Kuiter 2000: 113, figs. A–C (review; widespread West Pacific). – Laboute & Grandperrin 2000: 154, fig. (Nouvelle-Calédonie/New Caledonia).

Material

Total: 19 specimens.

New Caledonia, Grande Terre, Province Nord: SMNS 23381, 1 specimen; Baie de Banaré, 1 km ENE Poum, 20°13′40″S 164°01′51″E, lagoon of fringing reef with rocks and corals, 0.1–0.6 m depth at low tide; R. Fricke; 13 Nov. 2000. — **New Caledonia, Grande Terre,**

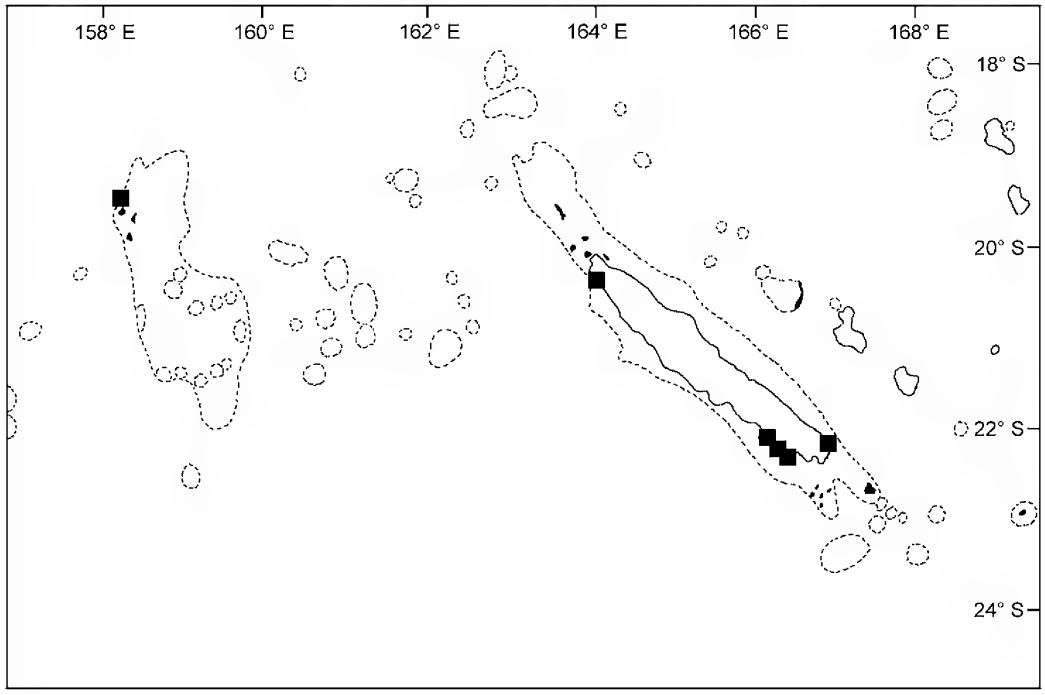

Fig. 6. Geographical distribution of *C. haematopterus* in New Caledonian waters.

Province Sud: IRDNC uncat., 1 specimen 60.6 mm SL; 22°16′08″S 166°28′58″E, 2 m depth, seagrass; M. KULBICKI; 31 Jan. 1996. – MNHN 6214, 1 specimen; MARIE. – MNHN A.4882–A.4883, 2 specimens; GERMAIN; 1882. – MNHN 2004-2016 (ex SMNS 23378), 2 specimens; Grande Rade, Île Nou, NE shore, 1 km ESE Nouville, 3.3 km WNW Nouméa, 22°15′52″S 166°24′40″E, fringing reef, 0.2–2.0 m depth; R. FRICKE; 10 Nov. 2000. – SMNS 18261, 3 specimens, 86.7–88.0 mm SL; Touaourou, 6 km SE Yaté, 22°10′36″S 166°57′51″E, lagoon, corals, sand, algae, 0.1–1.0 m depth at low tide; R. FRICKE; 25 July 1996. – SMNS 21740, 1 specimen, 65.6 mm SL; 22°16′08″S 166°28′58″E, 2 m depth, seagrass; M. KULBICKI; 31 Jan. 1996. – SMNS 23378, 2 specimens; same data as MNHN 2004-2016. – SMNS 23383, 2 specimens; Grande Rade, Île Nou, NE shore, 1 km ESE Nouville, 3.3 km WNW Nouméa, 22°15′52″S 166°24′40″E, fringing reef, 0.3–3.0 m depth; R. FRICKE; 14 Nov. 2000. – SMNS 23454, 4 specimens, 92.1–108.2 mm SL; Île Sainte-Marie, N end, 3.8 km ESE Nouméa, 22°17′40″S 166°27′50″E, fringing reef, 0.1–2.1 m depth; R. FRICKE; 25 Nov. 2000.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre) (Fig. 6). Outside the area, Indonesia to Palau/Belau and Vanuatu, north to southern Japan, south to northwestern Australia. This species lives on sheltered inner reef flats and rubble lagoons, usually in semi-silty zones (KUITER 2000: 113). It is known from depths of 0.1–10 m.

3.5 *Corythoichthys intestinalis* (Ramsay, 1881)

Banded pipefish; Australian messmate pipefish;
hippocampe flûte (French, New Caledonia)

Syngnatus intestinalis Ramsay, 1881: RAMSAY 1881: 494 (Duke of York Island, Bismarck Archipelago, Solomon Islands; lectotype: AMS A.8871, as designated by DAWSON 1977a: 315).

Corythoichthys flavofasciatus (non Rüppell, 1838): Whitley 1961: 64 (New Caledonia/ Nouméa region, Grande Terre).

Hippichthys intestinalis waitei: Plessis & Fourmanoir 1966: 125 (platier entre les Îles Prédour et Puen, Nouvelle-Calédonie/Grande Terre, New Caledonia).

Corythoichthys intestinalis: Fourmanoir & Laboute 1976: 272, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Dawson 1985: 42–43 (revision; Grande Terre and Loyalty Islands, New Caledonia, in distribution map). – Rivaton 1989: 143 (Îles Chesterfield/Chesterfield Islands; lagon de Nouvelle-Calédonie/Grande Terre, New Caledonia). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Zug et al. 1989: 15 (Rotuma). – Blaber et al. 1993: 110 (Moala/Fiji). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 32–225 m depth). – Myers 1999: 90 (New Caledonia; etc.). – Kuiter 2000: 118, figs. A–B (review; southern West Pacific). – Laboute & Grandperrin 2000: 154, fig. (Nouvelle-Calédonie/New Caledonia). – Dunning et al. 2001: 14 (North Queensland/Australia; taken by trawl fishery).

Corythoichthys amplexus (non Dawson & Randall, 1975): Kulbicki et al. 1994: 15 (Chesterfield Islands, 13–51 m depth).

Material

Total: 15 specimens.

Chesterfield Islands: SMNS 21786, 1 specimen, 107.0 mm SL; NE lagoon, 19°15′18″S 158°20′53″E, 32 m depth; B. Richer de Forges & R/V 'Coriolis', Cruise CORAIL2, St. DW.72; 25 July 1988. — **New Caledonia, Grande Terre, Province Sud**: AMS IB.2255, 1 specimen, 118 mm SL; Anse Vata, Nouméa, 22°16′S 166°26′E; 1948. – AMS IB.2371, 1 specimen; Ilot aux Canards. – AMS IB.7464, 1 specimen, 106 mm SL; Nouméa, 22°16′S 166°26′E. – IRDNC uncat., 2 specimens, 76.1–96.2 mm SL; Touaourou, 6 km SE Yaté, 22°10′36″S 166°57′51″E, lagoon, corals, sand, boulders, gravel, 0–0.6 m depth at low tide; R. Fricke; 26 July 1996. – MNHN A.2182, 1 specimen; Heurtel. – MNHN 1980-1028 and 1980-1029, 2 specimens; Anse Vata, Nouméa; J. E. Randall & L. A. Maugé; 1979. – MNHN 2004-2017 (ex SMNS 18290), 2 specimens; Touaourou, 6 km SE Yaté, 22°10′36″S 166°57′51″E, lagoon, corals, sand, boulders, gravel, 0–0.6 m depth at low tide; R. Fricke; 26 July 1996. – SMNS 18290, 2 specimens, 76.1–96.2 mm SL; same data as MNHN 2004-2017. – SMNS 21739, 1 specimen, 103.7 mm SL; 22°06′12″S 166°05′48″E, 17 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG3, St. DW.175; 18 Sep. 1984. – SMNS 21784, 1 specimen, 93.0 mm SL; 22°21′54″S 166°16′06″E, 19 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG1, St. DW.39; 24 May 1984. – SMNS 21788, 1 specimen, 79.4 mm SL; 22°22′30″S 166°20′42″E, 9 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG1, St. DW.4; 21 May 1984. – SMNS 21790, 1 specimen, ca. 56.6 mm SL; 22°18′30″S 166°13′48″E, 10 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG1, St. DW.49; 25 May 1984. – USNM 323980, 1 specimen; Nouméa, Pointe Cluxel, 22°18′30″S 166°27′24″E, 0.5–2.0 m depth; J. T. Williams & G. Mou-Tham; 7 Nov. 1991.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre); Loyalty Islands (Fig. 7). Outside the area, eastern Indonesia to Fiji, north to Philippines, south to northern Australia. Queensland/Australia; Solomon Islands; Rotuma. This species occurs on sheltered reefs, in shallow lagoons and harbours, at depths of 0–10 m, most commonly at 0–3 m depth.

Remarks

Specimens in the AMS which were reported by Whitley (1961) from New Caledonia as *Corythoichthys flavofasciatus* were reidentified as *C. intestinalis* by C. E. Dawson in 1975 (see note on AMS specimen labels).

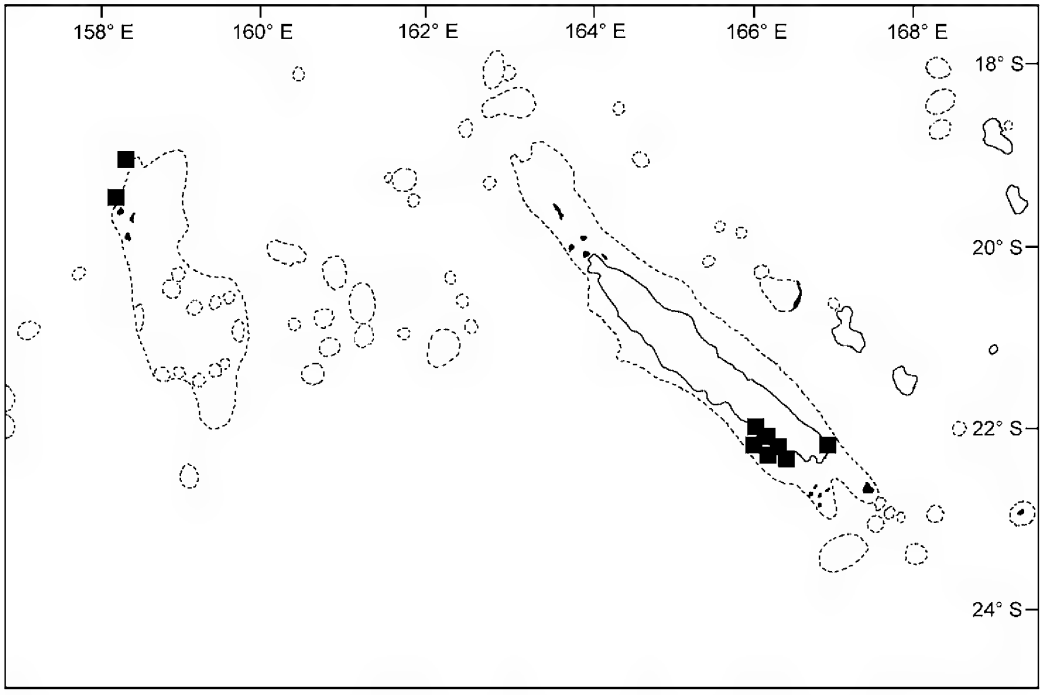

Fig. 7. Geographical distribution of *C. intestinalis* in New Caledonian waters.

3.6 *Corythoichthys nigripectus* Herald in Schultz et al., 1953
Blackbreasted pipefish

Corythoichthys nigripectus Herald in Schultz et al., 1953: Herald in Schultz et al. 1953: 275–276, fig. 41 B (Arji Island, Bikini Atoll, Marshall Islands; holotype: USNM 140230). – Rofen 1958: 208 (Rennell Island/Solomon Islands). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kuiter 2000: 121, fig. (review; Micronesia to central Pacific).

Material

Total: 33 specimens.

Chesterfield Islands: IRDNC uncat., 1 specimen, 78.4 mm SL; NE lagoon, 19°25′00″S 158°24′48″E, 56 m depth; B. Richer de Forges & R/V 'Coriolis', Cruise CORAIL 2, St. DW.119; 28 July 1988. – MNHN 2004-2018 (ex SMNS 21754), 1 specimen, 78.4 mm SL; NE lagoon, 19°25′00″S 158°24′48″E, 56 m depth; B. Richer de Forges & R/V 'Coriolis', Cruise CORAIL 2, St. DW.119; 28 July 1988. – SMNS 21753, 3 specimens, 74.6–91.8 mm SL; NE lagoon, 19°52′00″S 158°20′00″E, 51 m depth; B. Richer de Forges & R/V 'Coriolis', Cruise CORAIL 2, St. DW.152; 1 Aug. 1988. – SMNS 21754, 1 specimen, 88.2 mm SL; same data as MNHN 2004-2018. – SMNS 21773, 1 specimen, 69.5 mm SL; NE lagoon, 19°17′54″S 158°34′15″E, 65–68 m depth; B. Richer de Forges & R/V 'Coriolis', Cruise CHALCAL84, St. CP.7; 18 July 1984. — **New Caledonia, Grande Terre, Province Sud**: SMNS 21789, 1 specimen, ca. 128.8 mm SL; 22°37′24″S 167°08′30″E, 125–128 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG7, St. DW.386; 22 Jan. 1985. — **Loyalty Islands**: SMNS 21741, 1 specimen, 94.6 mm SL; Ouvéa Atoll, Bagaat Islet, vertical oceanside wall, 20°37′18″S 166°16′08″E, 18 m depth; J. T. Williams & R/V 'Alis', Cruise UVEA3; 16 Nov. 1991. – USNM 323981, 1 specimen; Ouvéa Atoll, southern end of lagoon, 20°42′48″S 166°24′00″E, 33 m depth; J. T. Williams, P. Tirard & J.-L. Menou; 13 Nov. 1991. – USNM 323982, 15 specimens; same data as SMNS 21741. – USNM 323983, 1 specimen; Ouvéa Atoll, southern section of the lagoon, 20°39′30″S 166°23′00″E, 20 m depth; J. T. Williams, P. Tirard

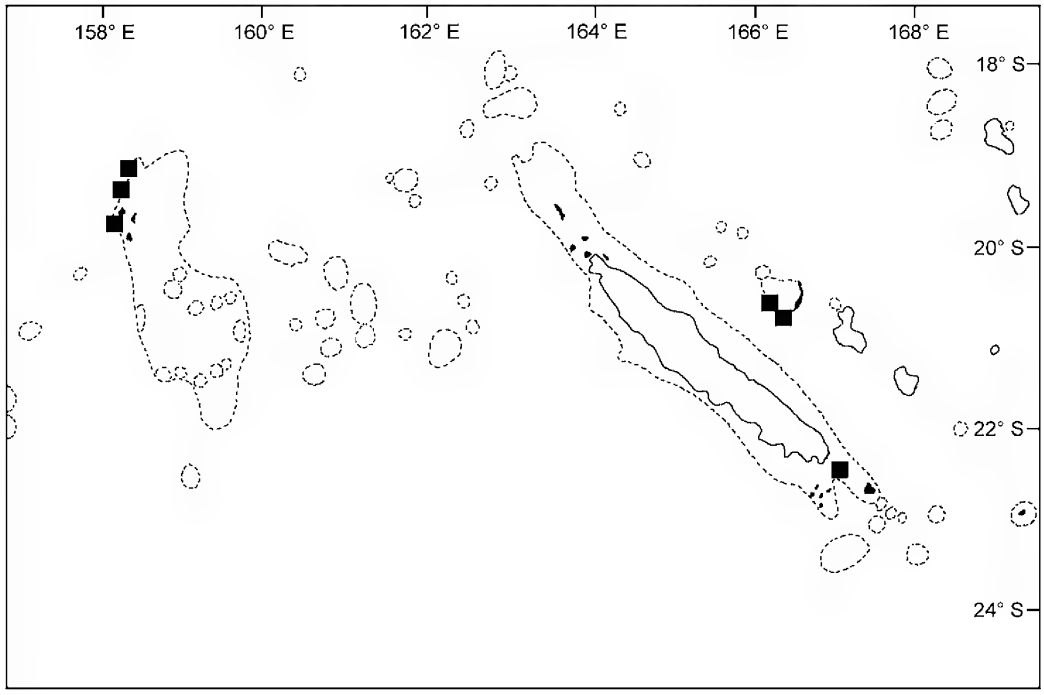

Fig. 8. Geographical distribution of *C. nigripectus* in New Caledonian waters.

& J.-L. Menou; 14 Nov. 1991. – USNM 323984, 4 specimens; Ouvéa Atoll, Bagaat Islet, small cave in the fringing reef on the ocean side on the SW corner of the reef, 20°37′19″S 166°16′12″E, 9–12 m depth; J.-L. Menou et al.; 18 Nov. 1991. – USNM 323985, 3 specimens; Ouvéa Atoll, Île Haute, deep surge channel on ocean side of reef, 20°29′12″S 166°19′18″E, 3–11 m depth; J. T. Williams, J.-L. Menou & P. Tirard; 19 Nov. 1991.

SW Pacific comparison material. **Tonga**: USNM 334455, 1 specimen; E'ua Island, NW coast, off a high cliff on top portion of a steep wall, 21°18′15″S 174°26′20″W, 20–30 m depth; J. T. Williams et al.; 3 Nov. 1993.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre); Loyalty Islands (Ouvéa) (Fig. 8). Outside the area, northern Red Sea; Caroline Islands to Fiji, Tonga (**new record**) and Society Islands. Solomon Islands. The species is usually found at depths of 5–30 m, on coral reefs.

3.7 *Corythoichthys ocellatus* Herald in Schultz et al., 1953

Ocellated pipefish; orange-spotted pipefish

Corythoichthys ocellatus Herald in Schultz et al., 1953: Herald in Schultz et al. 1953: 267–271, fig. 41A (Upper Purvis Bay, Florida Island/Solomon Islands; holotype CAS 20029; Munda/New Georgia, Solomon Islands; Manokwari/Papua, Indonesia). – Blaber et al. 1991: 18 (Munda/New Georgia, Solomon Islands; in checklist). – Kuiter 2000: 117, figs. A–B (review; West Pacific). – Laboute & Grandperrin 2000: 155, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia; récifs coralliens du lagon, 8–25 m). – Dunning et al. 2001: 14 (Queensland/Australia; taken by trawl fishery).

Distribution

New Caledonia (Grande Terre). Outside the area, Philippines and northern Sulawesi/Indonesia east to Palau/Belau, Papua New Guinea and Solomon Islands, south to Queensland/Australia. This species lives on algal or coral rubble reefs at depths of 0–25 m.

Remark

No specimens from the area in collections.

3.8 *Corythoichthys paxtoni* Dawson, 1977

Paxton's pipefish

Corythoichthys paxtoni Dawson, 1977: Dawson 1977a: 335, figs. 20–21 (One Tree Island, Capricorn Group, Queensland, Australia; holotype: AMS I0.18598-001). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 10 m depth). – Kuiter 2000: 118, fig. (Great Barrier Reef/Queensland, Australia). – Dunning et al. 2001: 14 (Central to North Queensland/Australia; taken by trawl fishery).

Distribution

Chesterfield Islands. Outside the area, Queensland/Australia. This species lives on shallow and protected reefs and in lagoons with coral rubble, at depths of 0–15 m.

Remark

No specimens from the area in collections.

3.9 *Corythoichthys schultzi* Herald in Schultz et. al., 1953

Guilded pipefish; Schultz's pipefish

Corythoichthys schultzi Herald in Schultz et al., 1953: Herald in Schultz et al. 1953: 271–273, fig. 42 (Arji Island, Bikini Atoll, Marshall Islands, 6.1–12.2 m depth; holotype: USNM 140233). – Dawson 1985: 46–47 (revision; Grande Terre, New Caledonia, in distribution map). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 45–75 m depth). – Fricke 1999: 148–149 (New Caledonia; etc.). – Paulus 1999: 2274, fig. (review; widespread in SW Pacific; etc.; in distribution map). – Kuiter 2000: 116–117, figs. A–F (review; widespread Indo-West Pacific). – Laboute & Grandperrin 2000: 155, fig. (Nouvelle-Calédonie/New Caledonia). – Dunning et al. 2001: 14 (North Queensland/Australia; taken by trawl fishery).

Material

Total: 32 specimens.

Chesterfield Islands: SMNS 21785, 1 specimen, 76.6 mm SL; NE lagoon, 19°08′58″S 158°52′30″E, 47–64 m depth; B. Richer de Forges & R/V 'Coriolis', Cruise CORAIL 2, St. DW.189; 28 Aug. 1988. — **New Caledonia, Grande Terre, Province Nord**: IRDNC uncat, 1 specimen, 86.0 mm SL; NW lagoon, 20°06′42″S 163°48′48″E; B. Richer de Forges & R/V 'Coriolis', Cruise PROPPAC2, St. DW.1025; 3 Apr. 1988. – SMNS 21749, 1 specimen, 97.2 mm SL; same data as IRDNC uncat. — **New Caledonia, Grande Terre, Province Sud**: MNHN 2004-2019 (ex SMNS 21738), 1 specimen, 111.2 mm SL; Sêche Croissant Reef, 22°20′20″S 166°22′30″E, 2 m depth, *Sargassum* and sand; M. Kulbicki; 1 Aug. 1996. – SMNS 21763, 1 specimen, 11.8+ mm SL; 22°31′12″S 166°44′00″E, 19 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.125; 23 Aug. 1984. — **Loyalty Islands**: MNHN 1980-0561, 3 specimens; M.-L. Bauchot & L. A. Maugé; 1979. – SMNS 21737, 2 specimens, 79.0–101.4 mm SL; Ouvéa Atoll, southern section of the lagoon, off Gee Islet on

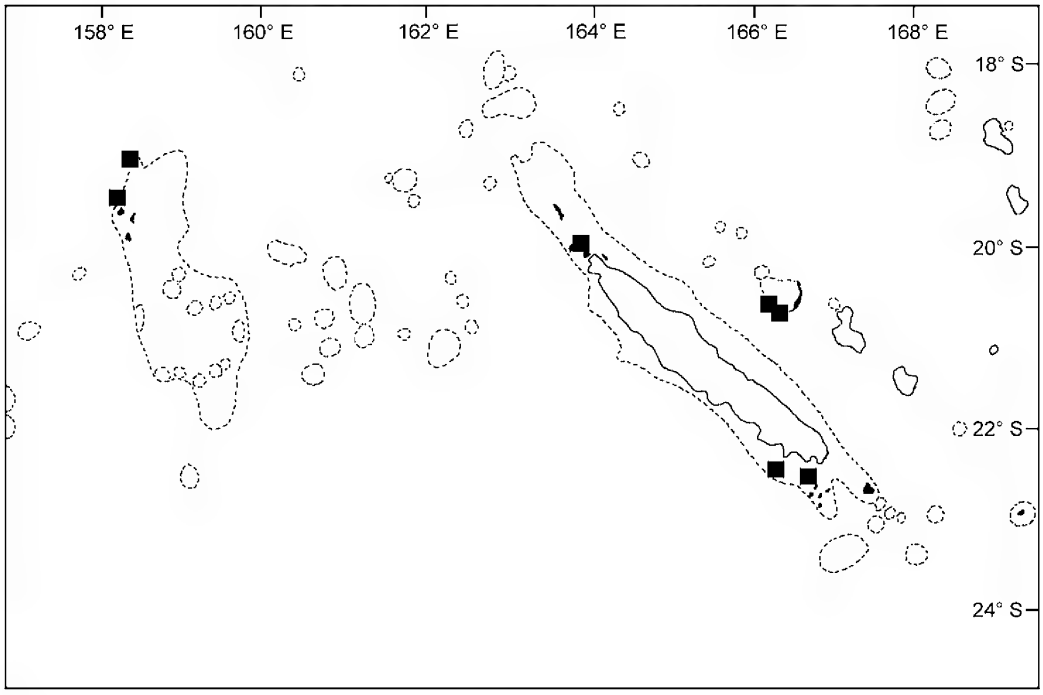

Fig. 9. Geographical distribution of *C. schultzi* in New Caledonian waters.

lagoon side, 20°39′30″S 166°23′00″E, 18 m depth; J. T. Williams et al. & R/V 'Alis', Cruise UVEA3; 14 Nov. 1991. – USNM 323986, 14 specimens; same data as SMNS 323986. – USNM 323987, 8 specimens; Ouvéa Atoll, Bagaat Islet, vertical oceanside wall, 20°37′18″S 166°16′08″E, 16–21 m depth; J. T. Williams, J.-L. Menou & P. Tirard; 16 Nov. 1991.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre); Loyalty Islands (Ouvéa) (Fig. 9). Outside the area, Red Sea, East Africa, Comores, Seychelles and western Mascarenes to Marshall and Tongan Islands, north to Ryukyu Islands, south to Rowley Shoals/Western Australia. Queensland/Australia; Fiji. This species occurs in coral reefs, occasionally also among seagrass, at depths of 1–30 m.

3.10 *Cosmocampus banneri* (Herald & Randall, 1972)
Roughridge pipefish

Syngnathus banneri Herald & Randall, 1972: Herald & Randall 1972: 135–136, fig. 4 (reef about 1/2 mile off harbour of Ishigaki City, Ryukyu Islands, 20–30 feet depth; holotype: BPBM 8695).

Cosmocampus banneri: Dawson 1985: 51 (revision; Grande Terre, New Caledonia, in distribution map, fig. 89, p. 54). – Zug et al. 1989: 15 (Rotuma). – Fricke 1999: 149 (New Caledonia; etc.). – Myers 1999: 90 (New Caledonia; etc.). – Kuiter 2000: 155, figs. A–B (review; Indo-West Pacific).

Material

Total: 2 specimens.

SW Pacific comparison material. **Rotuma**: USNM 283439, 1 specimen; Northern Reef, N of Motusa, 12°30′S 177°05′E, 0–41 m depth, offshore rock and coral head; V. G.

SPRINGER, G. D. JOHNSON & J. T. WILLIAMS; 17 May 1986. — **Tonga**: USNM 334377, 1 specimen; Tongatapu Group, Malinoa Island, reef on W side of island, 21°02′25″S 175°08′00″W, 7–10 m depth; J. T. WILLIAMS et al.; 23 Oct. 1993.

Distribution

New Caledonia (Grande Terre). Outside the area, Red Sea, East and South Africa to Marshall Islands, Rotuma, Fiji and Tonga (**new record**), north to Ryukyu and Bonin/Ogasawara Islands, south to Rowley Shoals/Western Australia. Known from coral and rocky reef habitats at 0.1–30 m depth and in intertidal pools.

Remarks

According to KUITER (2000: 15), specimens previously attributed to *Cosmocampus banneri* probably form a complex of closely related species which has been lumped together on the basis of similarities.

3.11 *Doryrhamphus melanopleura* Bleeker, 1858

Pacific bluestripe pipefish

Doryrhamphus melanopleura Bleeker, 1858: BLEEKER 1858: 464 (Nova Selma/Cocos Keeling Islands; holotype: RMNH 7251). – DUNCKER 1915: 61–62 (revision; Neu-Guinea, Nordostküste/Papua New Guinea; Fidschiinseln/Fiji; etc.). – WEBER & BEAUFORT 1922: 64–65, fig. 27 (N New Guinea; Rotuma; Samoa; etc.). – WHITLEY 1927: 4 (Fiji; in checklist), 8 (Rotuma). – FOWLER 1928: 111 (review; Rotuma; Samoa; etc.). – FOWLER 1931: 323 (Fiji; Rotuma). – FOWLER 1949: 66 (Tutuila/American Samoa; New Hebrides/Vanuatu; etc.). – ZUG et al. 1989: 15 (Rotuma). – KUITER 2000: 89, figs. A–C (review; widespread in West Pacific).

Doryrhamphus excisus excisus (non Kaup, 1856): DAWSON 1985: 61 (review). – KULBICKI et al. 1994: 16 (Chesterfield Islands, 3–15 m depth). – THOLLOT 1996a: 9 (south-west lagoon of Grande Terre, New Caledonia). – THOLLOT 1996b: 281 (lagon sud-ouest/SW lagoon, Grande Terre, New Caledonia). – LABOUTE & GRANDPERRIN 2000: 156, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia).

Doryrhamphus excisusexcisus (non Kaup, 1856): RIVATON et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist).

Doryrhamphus excisus (non Kaup, 1856): ZUG et al. 1989: 15 (Rotuma). – BLABER et al. 1991: 18 (Vona Vona, Solomon Islands).

Doryrhamphus (Doryrhamphus) excisus excisus (non Kaup, 1856): PAULUS 1999: 2275, fig. (review; SW Pacific; etc.; in distribution map).

Material

Total: 47 specimens.

New Caledonia, Grande Terre, Province Nord: SMNS 22748, 1 specimen, 40.8 mm SL; 1.5 km E of mouth of Rivière Ouaième, 14 km NW Hienghène, 20°36′30″S 164°51′50″E, black rocks and boulders with few algae, 0–6.0 m depth; R. FRICKE; 12 May 2000. — **New Caledonia, Grande Terre, Province Sud**: IRDNC uncat., 1 specimen, 56.2 mm SL; Baie de Saint-Vincent, 22°21′00″S 164°57′48″E, 4 m depth; M. KULBICKI & R/V 'Alis'; 31 Mar. 1989. – MNHN 2004-2020 (ex SMNS 23456), 1 specimen, 52.2 mm SL; Île Sainte-Marie, N end, 3.8 km ESE Nouméa, 22°17′40″S 166°27′50″E, fringing reef, 0.1–2.1 m depth; R. FRICKE; 25 Nov. 2000. – SMNS 21745, 1 specimen, 59.0 mm SL; Baie de Saint-Vincent, 22°21′00″S 164°57′48″E, 4 m depth; M. KULBICKI & R/V 'Alis'; 31 Mar. 1989. – SMNS 23456, 1 specimen, 54.2 mm SL; same data as MNHN 2004-2020. — **New Caledonia, Île des Pins**: SMNS 22882, 1 specimen, 36.5 mm SL; S end of Baie de Ouaméo, at Point Mukotràaxuu, 22°33′21″S 167°25′03″E, rocks with algae and few corals, 0–3.5 m depth; R. FRICKE; 17 May 2000. – SMNS 23459, 2 specimens, 54.4–58.4 mm SL; Ilot Mwere, NE tip, 13 km NW Vao, 22°36′33″S 167°24′40″E, cave with rocks, sand, few corals, few algae, anemones, 0–2.5 m depth; R. FRICKE; 27 Nov. 2000. — **Loyalty Islands**: MNHN 2004-2021 (ex SMNS 23453), 1 specimen,

39.2 mm SL; Lifou Island, 200 m WNW Notre-Dame de Lourdes/Cap Easo, 4 km W Xepenehe, N side of Baie du Santal, 20°47′11″S 167°07′20″E, protected fringing reef with coral gravel, 0–3 m depth at low tide; R. Fricke; 22 Nov. 2000. – SMNS 19880, 1 specimen, 43.3 mm SL; Maré Island, west coast, Cap Wabao, 150 m NNE of cape, Baie de Tadin, 6 km SW Tadin, 21°35′45″S 167°50′06″E, surge channel and deep open reef pool, rich coral growth, 0–3.8 m depth at low tide; R. Fricke; 12 Nov. 1997. – SMNS 22927, 2 specimens, 21.9–43.9 mm SL; Lifou Island, Baie du Santal, 1 km NNE Peng, 20°52′10″S 167°08′02″E, cave with gravel bottom, rocks, sponges, few corals, 0–3 m depth; R. Fricke; 19 May 2000. – SMNS 22978, 1 specimen, 34.3 mm SL; Lifou Island, Baie du Santal, 2 km NNE Peng, 20°51′45″S 167°08′10″E, rocks, corals, 0–3.5 m depth; R. Fricke; 20 May 2000. – SMNS 23385, 2 specimens; Lifou Island, Baie de Jokin/Doking, 1 km SSW Jokin/Doking, 20°41′30″S 167°10′20″E, rocks and coral with gravel bottom, 0–3.0 m depth at low tide; R. Fricke; 16 Nov. 2000. – SMNS 23453, 1 specimen, 54.2 mm SL; same data as MNHN 2004-2021. – USNM 323994, 1 specimen; Ouvéa Atoll, southern end of lagoon, 20°42′48″S 166°24′00″E, 12 m depth; J. T. Williams, P. Tirard & J.-L. Menou; 13 Nov. 1991. – USNM 323995, 2 specimens; Ouvéa Atoll, southern section of lagoon, 20°39′30″S 166°23′00″E, 18 m depth; J. T. Williams, P. Tirard & J.-L. Menou; 14 Nov. 1991. – USNM 323996, 2 specimens; Ouvéa Atoll, ocean side of Gece Islet, 20°41′18″S 166°22′30″E, 0.3–5.0 m depth; J. T. Williams & M. Kulbicki; 14 Nov. 1991. – USNM 323997, 2 specimens; Ouvéa Atoll, patch reef off Motu Veiloa Islet, 20°26′06″S 166°28′30″E, 0.6–3.0 m depth; J. T. Williams & M. Kulbicki; 17 Nov. 1991. – USNM 323998, 2 specimens; Ouvéa Atoll, Île Haute, 20°29′12″S 166°19′18″E, 3–10 m depth; J. T. Williams, J.-L. Menou & P. Tirard; 19 Nov. 1991.

SW Pacific comparison material. **Solomon Islands**: USNM 357092, 1 specimen; Santa Cruz Islands, Duff Cluster, Taumako Island, N end of island at Pralau Point, 9°51′S 167°09′30″E, 0–8 m depth; J. T. Williams et al.; 21 Sep. 1998. — **Vanuatu**: USNM 287460, 1 specimen; Santo Island/Espiritu Santo; A. Power; 1986. – USNM 346223, 1 specimen; Erromango Island, Port Narevin, SE edge of harbour, 18°44′25″S 169°12′41″E, 0–5.5 m depth; J. T. Williams et al.; 28 May 1996. – USNM 355386, 1 specimen; Tanna Island, Port Resolution, 600 m SE of Resolution Point, 19°31′33″S 169°29′50″E, 1–5.3 m depth; J. T. Williams et al.; 2 June 1996. – USNM 356208, 1 specimen; Shepherd Islands, Nemuka Island, W side of island, 16°49′37″S 168°22′15″E, 0–2 m depth; J. T. Williams et al.; 11 June 1996. — **Fiji**: SMNS 15077, 1 specimen, 40.2 mm SL; Saweni Beach, 6 km W Lautoka, Viti Levu Island, 17°38′52″S 177°23′28″E, 0.5–2.0 m depth, muddy reef on W side of bay; R. Fricke; 25 Aug. 1993. – SMNS 18107, 1 specimen, 29.5 mm SL; Tambua Sands, Coral Coast, 16 km SE Sigatoka, Viti Levu Island, 18°11′28″S 177°37′32″E, 0–2 m depth; R. Fricke; 5 July 1996. — **Tonga**: USNM 334052, 9 specimens; Tongatapu Island, NW coast at Ha'atafu Beach, 21°03′57″S 175°19′45″W, 0–1.3 m depth; J. T. Williams et al.; 26 Oct. 1993. – USNM 334385, 3 specimens; E'ua Island, S of Aonua Harbour, 21°20′15″S 174°58′14″W, 3–13 m depth; J. T. Williams et al.; 2 Nov. 1993. – USNM 336645, 2 specimens; Ha'apai Group, E edge of Taniu Reef in caves and surge channels, 19°16′48″S 174°22′59″W, 1.6–7.3 m depth; J. T. Williams et al.; 10 Nov. 1993. – USNM 228361, 1 specimen; Vava'u Group, Ovaka Island, NW side of island, 18°44′31″S 174°06′36′W, 0.1–10 m depth; J. T. Williams et al.; 17 Nov. 1993.

Distribution

Chesterfield Islands (**new record**); New Caledonia (Grande Terre; Île des Pins, **new record**); Loyalty Islands (Ouvéa; Lifou; Maré) (**new record**) (Fig. 10). Outside the area, Indonesia east to Marshall Islands, north to southern Japan, south to Western Australia at 17°20′S, Great Barrier Reef/Queensland, Australia at 23°30′S and Tuamotu Archipelago. Solomon Islands; Vanuatu; Rotuma; Fiji; Tonga; American Samoa. This species lives in coralline caves or under large coral bommies on shallow reef flats and lagoons, or in caves of rocky reefs, at depths of 0–10 m. It often occurs in pairs and is a cleaner of other fishes.

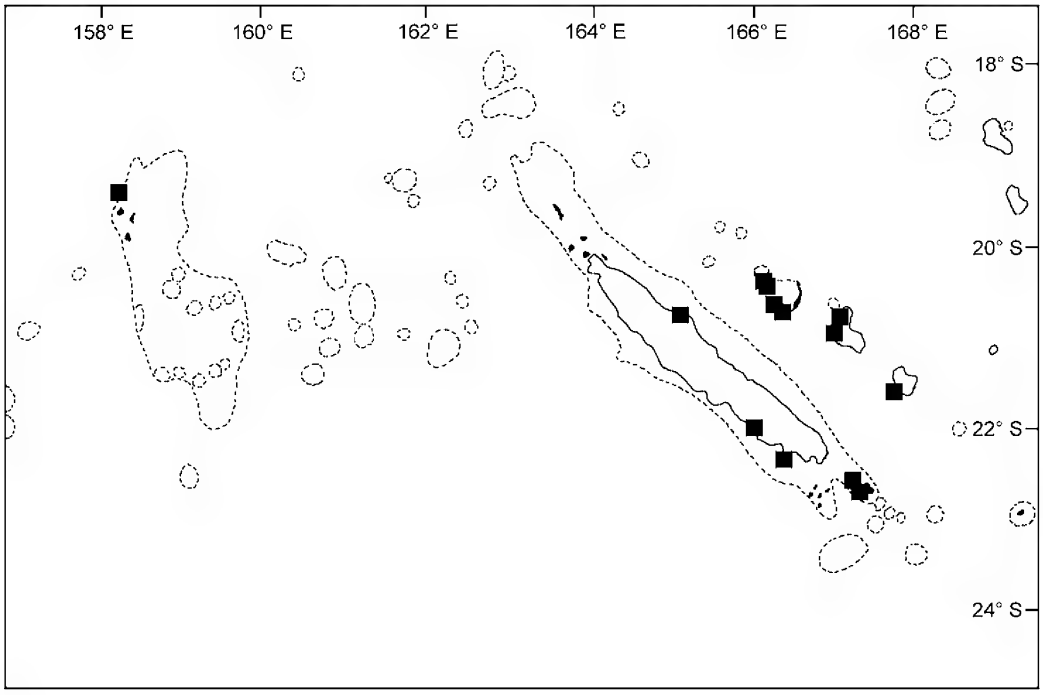

Fig. 10. Geographical distribution of *Doryrhamphus melanopleura* in New Caledonian waters.

3.12 *Dunckerocampus chapmani* Herald in Schultz et al., 1953
Glowtail pipefish; New Caledonian pipefish

Syngnathus sp.: Jouan 1861: 250–251 (Port-de-France, Nouvelle-Calédonie/Nouméa, Grande Terre, New Caledonia).

Dunckerocampus caulleryi chapmani Herald in Schultz et al., 1953: Herald in Schultz et al. 1953: 250–252 (rocky ledge on Ducos Peninsula, Nouméa, New Caledonia; holotype: CAS 19942; Anse Vata/Grande Terre, New Caledonia). – Fourmanoir & Laboute 1976: 273, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia).

Doryrhampus (Dunckerocampus) chapmani: Dawson 1985: 66 (review; vicinity of Nouméa, New Caledonia).

Doryrhamphus chapmani: Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Rivaton & Bourret 1999: 46 (otolithes; Lagon Nouvelle-Calédonie/Grande Terre, New Caledonia).

Dunckerocampus chapmani: Kuiter 1998: 81 (New Caledonia/Grande Terre). – Kuiter 2000: 97, fig. (review; New Caledonia region only).

Material

Total: 35 specimens.

New Caledonia, Grande Terre, Province Sud: AMS IB.7615, 1 specimen, 85 mm SL; Nouméa, 22°16′S 166°26′E. – AMS I0.38050-001, 3 specimens, 58.1–64.8 mm SL; Nouméa, 22°16′S 156°26′E; 1997. – CAS 19942, holotype of *Dunckerocampus caulleryi chapmani* Herald; rocky ledge on Ducos Peninsula, Nouméa. – GCRL 16747, 1 specimen; Nouméa. – IRDNC uncat., 1 specimen, 68.1 mm SL; 22°16′08″S 166°28′58″E, 2 m depth; M. Kulbicki; 31 Jan. 1996. – MNHN 1384, 1 specimen; Marie. – MNHN 1980-1006, 4 specimens; Nouméa, Anse Vata; J. E. Randall & L. A. Maugé; 1979. – MNHN 1980-1076, 1 specimen; Passe Boulari; M.-L. Bauchot & L. A. Maugé; 1979. – MNHN 2004-2022 (ex SMNS 23379), 2 specimens; Grande Rade, Île Nou, NE shore, 1 km ESE Nouville, 3.3 km WNW Nouméa,

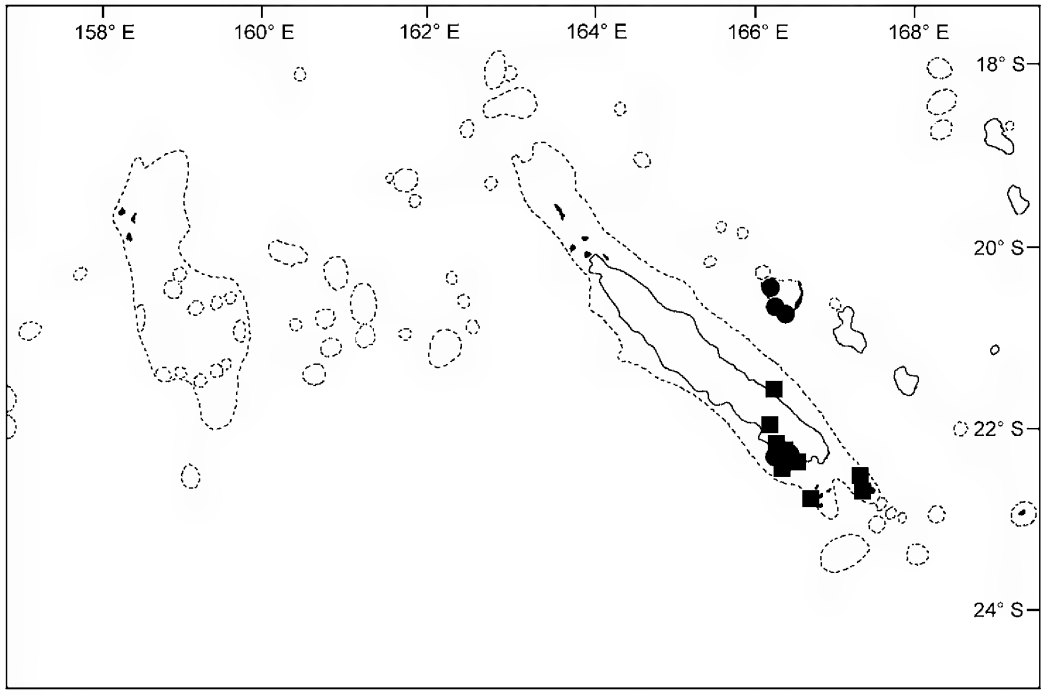

Fig. 11. Geographical distribution of *Dunckerocampus chapmani* (■) and *D. dactyliophorus* (●) in New Caledonian waters.

22°15′52″S 166°24′40″E, fringing reef, 0.2–2.0 m depth; R. Fricke; 10 Nov. 2000. – SMNS 21692, 2 specimens; Baie de Port-Bouquet, 3.5 km W Saint-Roch, 20 km SE Thio, 21°42′21″S 166°20′52″E, red mud, rocks, coral and gravel, 0.5–3.0 m depth; R. Fricke; 20 July 1999. – SMNS 21726, 2 specimens, 68.1–79.7 mm SL; 22°16′08″S 166°28′58″E, 2 m depth; M. Kulbicki; 31 Jan. 1996. – SMNS 21727, 1 specimen, 114.4 mm SL; Bancs Nord, 22°23′10″N 166°30′50″E, 8 m depth, sand and coral; M. Kulbicki; 5 Sep. 1985. – SMNS 21728, 1 specimen, 81.8 mm SL; Île Kouaré, 22°46′42″S 166°47′36′E, 15 m depth; M. Kulbicki; 17 June 1986. – SMNS 21729, 1 specimen, 109.0 mm SL; Île Kouaré, 22°46′42″S 166°48′24″E, 10 m depth, coral patches on white sand; M. Kulbicki; 18 June 1986. – SMNS 23379, 1 specimen; same data as MNHN 2004-2022. – SMNS 23382, 1 specimen; Grande Rade, Île Nou, NE shore, 1 km ESE Nouville, 3.3 km WNW Nouméa, 22°15′52″S 166°24′40″E, fringing reef, 0.3–3.0 m depth; R. Fricke; 14 Nov. 2000. – SMNS 23455, 2 specimens, 52.9–72.8 mm SL; Île Sainte-Marie, N end, 3.8 km ESE Nouméa, 22°17′40″S 166°27′50″E, fringing reef, 0.1–2.1 m depth; R. Fricke; 25 Nov. 2000. – SU 16118, 2 paratypes of *Dunckerocampus caulleryi chapmani* Herald; Anse Vata, Nouméa. – USNM 323988, 4 specimens; Nouméa, Pointe Cluxel, 22°18′30″S 166°27′24″E, 0.5–2.0 m depth; J. T. Williams & G. Mou-Tham; 7 Nov. 1991. — **New Caledonia, Île des Pins, Province Sud**: SMNS 22881, 1 specimen, 60.6 mm SL; S end of Baie de Ouaméo, at Point Mukotràaxuu, 22°33′21″S 167°25′03″E, rocks with algae, sponges and few corals, 0–3.5 m depth; R. Fricke; 17 May 2000. – SMNS 23458, 2 specimens, 38.1–75.6 mm SL; Ilot Mwere, NE tip, 13 km NW Vao/Île des Pins, 22°36′33″S 167°24′40″E, cave with rocks, sand, few corals, few algae, anemones, 0–2.5 m depth; R. Fricke; 27 Nov. 2000.

Distribution

New Caledonia (southern Grande Terre; Île des Pins, **new record**) (Fig. 11). Endemic to the southern Grande Terre Group. This species lives in lagoon habitats at depths of 0–8 m.

3.13 *Dunckerocampus dactyliophorus* (Bleeker, 1853)

Banded pipefish; flûte rayé (French, New Caledonia)

Syngnathus dactyliophorus Bleeker, 1853: Bleeker 1853a: 506–507 (Batavia, ad insulam Onrust/Java, Indonesia; in mari; 2 specimens, 130–144 mm TL; possible syntypes: BMNH 1981.5.22:3, 1 specimen; RMNH 7247, 2 specimens).

Doryichthys dactyliophorus: Günther 1910: 433–434 (Neu-Caledonien/New Caledonia).

Acanthognathus dactyliophorus: Duncker 1915: 41–42, pl. (revision; Neu-Guinea/New Guinea; Neukaledonien/Grande Terre, New Caledonia; etc.). – Weber & Beaufort 1922: 42–43, fig. 20 (New Caledonia; etc.). – Fowler 1928: 110 (review; New Caledonia; etc.).

Dunckerocampus dactyliophorus: Herald in Schultz et al. 1953: 252–254, pl. 22B (Solomon Islands; etc.).

Doryrhamphus (Dunckerocampus) dactyliophorus: Dawson 1985: 67 (review; Grande Terre, New Caledonia, in distribution map, fig. 110, p. 69). – Myers 1999: 90–92 (New Caledonia; etc.).

Doryrhamphus dactyliophorus: Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Zug et al. 1989: 15 (Rotuma). – Blaber & Milton 1990: 262 (Solomon Islands). – Blaber et al. 1991: 18 (Munda and Vona Vona, Solomon Islands). – Blaber et al. 1993: 110 (Moala/Fiji). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 3–8 m depth). – Kuiter 2000: 96–97, figs. A–F (review; West Pacific). – Laboute & Grandperrin 2000: 156, figs. (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Dunning et al. 2001: 14 (North Queensland/Australia; taken by trawl fishery).

Doryrhamphus (Doryrhamphus) dactyliophorus: Paulus 1999: 2274, fig. (review; widespread in SW Pacific; etc.; in distribution map).

Material

Total: 20 specimens.

New Caledonia, Grande Terre, Province Sud: AMS IB.7430, 2 specimens, 56–64 mm SL. – MNHN 1980-0246, 1 specimen; Ilot Maitre; P. Fourmanoir. – MNHN 1980-0247, 1 specimen; P. Fourmanoir; 1977. – MNHN 1980-1032, 1 specimen; Nouméa, Anse Vata; J. E. Randall & L. A. Maugé; 1979. — **Loyalty Islands**: MNHN 1980-0128, 1 specimen; P. Fourmanoir. – USNM 323989, 1 specimen; Ouvéa Atoll, southern end of lagoon, 20°42′48″S 166°24′00″E, 11 m depth; J. T. Williams, P. Tirard & J.-L. Menou; 13 Nov. 1991. – USNM 323990, 1 specimen; Ouvéa Atoll, southern section of lagoon, off Gee Islet on lagoon side, 20°39′30″S 166°23′00″E, 18 m depth; J. T. Williams, P. Tirard & J.-L. Menou; 14 Nov. 1991. – USNM 323991, 1 specimen; Ouvéa Atoll, Bagaat Islet, vertical oceanside wall, 20°37′18″S 166°16′08″E, 16–21 m depth; J. T. Williams, J.-L. Menou & P. Tirard; 16 Nov. 1991. – USNM 323992, 1 specimen; Ouvéa Atoll, Île Haute, 20°29′12″S 166°19′18″E, 3–10 m depth; J. T. Williams, J.-L. Menou & P. Tirard; 19 Nov. 1991.

SW Pacific comparison material. **Vanuatu**: USNM 348186, 1 specimen; Efate Island, W coast, just S of Paul Rock, 17°41′39″S 168°10′10″E, 10–16 m depth; J. T. Williams et al.; 23 May 1996. – USNM 350491, 2 specimens; Epi Island, Port Quemy, 16°47′13″S 168°21′36″E, 1–9 m depth; J. T. Williams et al.; 16 June 1996. – USNM 350583, 1 specimen; Lamen Island, deep hole in the fringing reef on W side of island, 16°35′30″S 168°06′30″E, 9–18 m depth; J. T. Williams et al.; 14 June 1996. – USNM 354481, 2 specimens; Shepherd Islands, Emae Island, Namvalala Reef, off Sulua Bay, 17°03′18″S 168°21′43″E, 16–18 m depth; J. T. Williams et al.; 7 June 1996. — **Rotuma**: USNM 283431, 1 specimen; E side of island, just E of Afnaha Islet, 12°30′S 177°05′E, 21–23 m depth; V. G. Springer, G. D. Johnson & J. T. Williams; 21 May 1986. — **Tonga**: USNM 336835, 1 specimen; Ha'apai Group, Ofolanga Island, shallow reef on SW side of island, 19°36′11″S 174°27′54″W, 6–14.5 m depth; J. T. Williams et al.; 12 Nov. 1993. – USNM 338357, 2 specimens; Vava'u Group, Ovaka Island, NW side of island, 18°44′31″S 174°06′36′W, 0.1–10 m depth; J. T. Williams et al.; 17 Nov. 1993.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre); Loyalty Islands (Ouvéa) (Fig. 11). Outside the area, Indonesia to Samoa, Rotuma (**new record**) and Tonga

(**new record**), north to Ryukyu Islands. Queensland/Australia; Solomon Islands; Vanuatu (**new record**); Fiji. This species is known from depths of 0.1–56.4 m; it also occurs in intertidal areas and tide pools. This species is found on coral reefs and in lagoons; adults usually live in pairs, while juveniles occasionally occur in larger aggregations.

3.14 *Festucalex kulbickii* **n. sp.** (Fig. 12)

Kulbicki's pipefish

Ichthyocampus erythraeus (non Gilbert, 1905): Plessis & Fourmanoir 1966: 125 (platier récifal en baie de Saint-Vincent, Nouvelle-Calédonie/Grande Terre, New Caledonia).

Festucalex erythraeus (non Gilbert, 1905): Dawson 1985: 70–71, fig. 113 (revision; Île Ouen/Grande Terre Group, New Caledonia). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 35–69 m depth).

Festucalex gibbsi (non Dawson, 1977): Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 35–41 m depth).

Festucalex sp. 1: Kuiter 2000: 122, fig. (New Caledonia).

Material

Total: 15 specimens.

Holotype. **Grande Terre, Province Sud**: MNHN 2004-2023, female, 58.1 mm SL; Grande Rade, 22°14′04″N 166°24′01″E, 2 m depth, coral and sand; M. Kulbicki; 2 Apr. 1999.

Paratypes. **Chesterfield Islands**: SMNS 21755, 1 female, 57.8 mm SL; NE lagoon, 19°25′00″S 158°24′48″E, 56 m depth; B. Richer de Forges & R/V 'Coriolis', Cruise CORAIL 2, St. DW.119; 28 July 1988. — **New Caledonia, Grande Terre, Province Nord**: SMNS 21779, 1 female, 52.1 mm SL; Passe de Canala, 34 km E Houailou, E lagoon, 21°18′36″S 165°56′00″E, 41–43 m depth; B. Richer de Forges & R/V 'Vauban', Cruise DRAGAGE, St. 725; 12 Aug. 1986. – SMNS 21780, 1 male, 63.5 mm SL; 19 km NNE Canala, E lagoon, 21°24′00″S 166°02′30″E, 30–31 m depth; B. Richer de Forges & R/V 'Vauban', Cruise DRAGAGE, St. 710; 10 Aug. 1986. – SMNS 21781, 1 female, 51.5 mm SL; 16 km E Houailou, E lagoon, 21°19′42″S 165°57′48″E, 36–38 m depth; B. Richer de Forges & R/V 'Vauban', Cruise DRAGAGE, St. 724; 12 Aug. 1986. — **New Caledonia, Grande Terre, Province Sud**: AMS I0.38050-003, 1 male, 61.8 mm SL; Nouméa, 22°16′S 166°26′E; 1977. – IRDNC uncat. 1 female, 53.2 mm SL; 22°23′36″S 166°47′54″E, 42 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.112; 22 Aug. 1984. – SMNS 21764, 1 female, 51.0 mm SL; SW Baie de Prony, 43 km ESE Nouméa, 22°23′36″S 166°49′36″E, 37 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.114; 22 Aug. 1984. – SMNS 21770, 1 female, 58.2+ mm SL; reef 15 km S Île Ouen, Grand Récif Sud, 22°36′30″S 166°50′30″E, 16–17 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG6, St. DW.302; 24 Nov. 1984. – SMNS 21774, 1 female, 59.4 mm SL; 9 km SE Île aux Goelands, 22°26′00″S 166°26′18″E, 20 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.63; 20 Aug. 1984. – SMNS 21777, 1 female, 63.8 mm SL; Île Atire, SW lagoon, 22°32′36″S 166°34′36″E, 15 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.100; 21 Aug. 1984. – SMNS 21791, 1 male, 51.8 mm SL; 22°23′36″S 166°47′54″E, 42 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.112; 22 Aug. 1984. – SMNS 21792, 1 specimen, 52.0 mm SL; 18 km SSE Nouméa, SW lagoon, 22°22′48″S 166°31′42″E, 13 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG2, St. DW.69; 20 Aug. 1984. – USNM 378952, 1 female, 67.7 mm SL; reef 15 km S Île Ouen, Grand Récif Sud, 22°36′30″S 166°50′30″E, 16–17 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG6, St. DW.302; 24 Nov. 1984.

Other material. **New Caledonia, Grande Terre, Province Sud**: AMS I0.38050-003, 1 male, 61.6+ mm SL; Nouméa, 22°16′S 166°26′E; 1977.

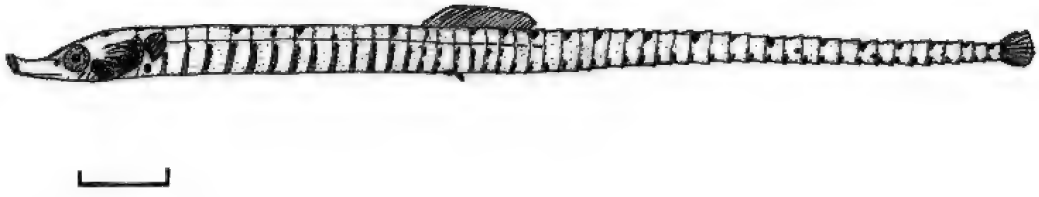

Fig. 12. *Festucalex kulbickii* n. sp.; holotype, MNHN 2004-2023, female, 58.1 mm SL; Grande Rade, Nouméa, Grande Terre, New Caledonia, 2 m depth. Lateral view (scale: 5 mm).

Etymology

This new species is named in honour of Dr. MICHEL KULBICKI (I.R.D., Nouméa, New Caledonia), who collected the holotype and other syngnathids.

Diagnosis

A species of *Festucalex* with principal tail ridges bearing a small posterior spine-like projection on each ring, 11–14 pectoral fin rays, 19–22 dorsal fin rays, 16–17 + 31–40 body rings (total 48–57), snout length 2.3–2.6 in head length, lateral trunk ridge ending on 5th–9th tail ring, and in life with 13 broad pink bands across the body.

Description

D xix (xix–xxii); A iv (iv); P xi–xiii (xi–xiv); C x (x). Trunk rings 16 (16–17); tail rings 33 (31–40); total rings 49 (48–57); subdorsal rings 2 + 5 (1–2 + 5–6); total subdorsal rings 7 (7).

Head 7.4 (6.6–8.7) in SL (11–15 % of SL). Median dorsal snout ridge entire, not strongly elevated, without bony knobs or spines, not confluent with orbital ridges. A short indistinct opercular ridge; operculum with striae. Other head ridges low and indistinct. Snout length 2.5 (2.3–2.6) in head length (5–6 % of SL). Snout depth 6.5 (4.2–9.5) in head length (2–3 % of SL). Eye diameter 6.0 (3.8–6.7) in head length (2–3 % of SL).

Superior and inferior trunk ridges continuous with their respective tail ridges. Lateral trunk ridge not deflected near anal fin, ends mid-laterally on 5th (5th–9th) tail ring. Margins of head and body ridges entire, neither denticulate nor serrate. Dermal flaps absent. Body depth 21 (19–27) in SL (4–5 % of SL). Body width 22 (23–31) in SL (3–5 % of SL). Preanus length 2.3 (2.2–2.6) in SL (39–47 % of SL). Principal tail ridges behind dorsal fin with a small posterior spine-like projection on each ring. Brood pouch under tail rings 1–12 (in SMNS 21780), pouch folds present, semi pouch closure.

Dorsal fin origin on trunk; dorsal fin base not elevated. Dorsal fin base length 10.2 (7.5–8.3) in SL (10–13 % of SL). Predorsal length 2.4 (2.4–2.6) in SL (38–42 % of SL). Pectoral fin length 45 (30–46) in SL (2–4 % of SL). Prepectoral length 6.9 (6.2–7.6) in SL (13–16 % of SL). Caudal fin length 35 (29–40) in SL (2–3 % of SL).

Colour in alcohol: Head and body pale in fresh specimens, sides of head with dark blotches behind eye and on operculum. Eye dark grey. Basal half of each ring with a vertical dark streak. Back with dark saddles. Fins pale.

Colour in life: Head with pink blotches behind the eyes and on the operculum. Body with 13 broad pink bands, 4–5 on trunk and 8–9 on tail.

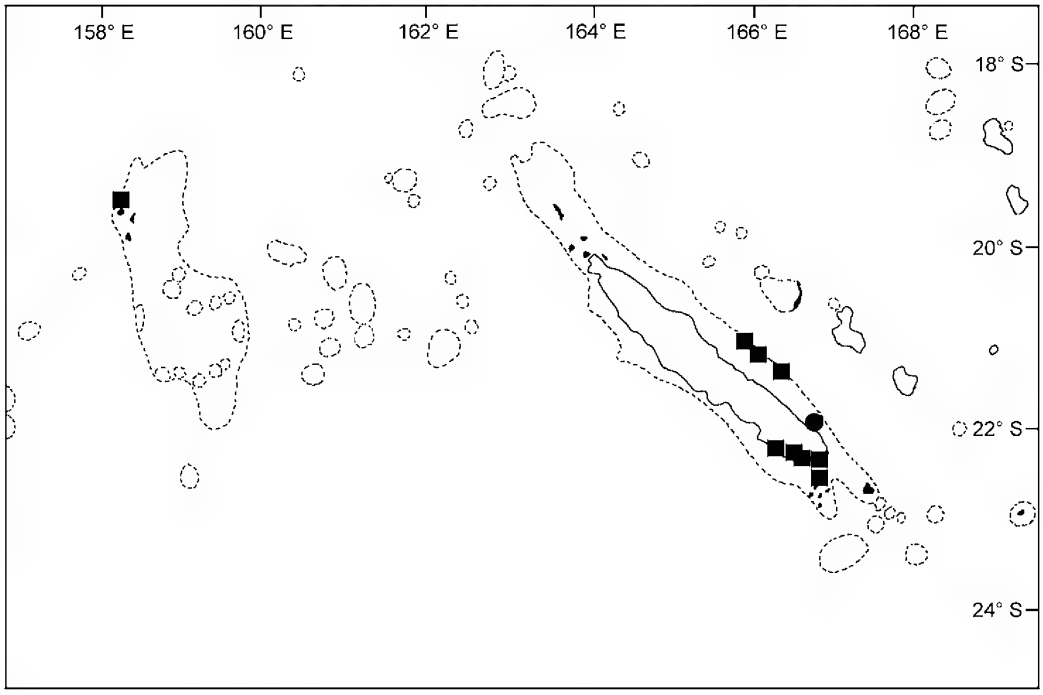

Fig. 13. Geographical distribution of *Festucalex kulbickii* n. sp. (■) and *F. wassi* (●) in New Caledonian waters.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre, Provinces Nord and Sud, Grand Récif Sud) (Fig. 13). Endemic to the area. This new species has been collected in lagoon habitats, at depths of 2–56 m.

Comparisons

Festucalex kulbickii n. sp. is distinguished from other species of the genus in its principal tail ridges with a small posterior spine-like projection on each ring (other species: ridges smooth, at most with a few spinules on the last two rings) and in life by the 13 broad pink bars; it also differs from *F. wassi* in its 11–14 pectoral fin rays and snout 2.3–2.6 in head length (*F. wassi*: pectoral fin rays 16–17, snout 1.7–1.8 in head length), from *F. prolixus*, *F. cinctus* and *F. erythraeus* in the lateral trunk ridge that ends on 5th–9th tail ring (on 0–1st tail rings in *F. erythraeus*; 1st–4th tail rings in *F. cinctus*; on 10th–13th ring in *F. prolixus*), from *F. scalaris* and *F. gibbsi* in the 16–17 trunk rings (*F. scalaris* modally 19, *F. gibbsi* modally 18), and from *F. cinctus* by the lacking pale bar on the postorbital.

Remarks

Kuiter (2000: 12) suggested that this might be a variation of *F. cinctus*, but the species is more closely related to *Festucalex wassi*.

3.15 *Festucalex wassi* Dawson, 1977
Wass' pipefish

Festucalex wassi Dawson, 1977: Dawson 1977b: 635, figs. 11 (bottom), 13 (Tutuila Island, American Samoa; holotype: BPBM 18716). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist).

Material

Total: 3 specimens.
New Caledonia, Grande Terre, Province Sud: IRDNC uncat., 1 specimen, 59.8 mm SL; 22°08′24″S 166°59′06″E, 49–50 m depth; B. Richer de Forges & R/V 'Vauban', Cruise DRAGAGE, St. 737; 12 Aug. 1986. – MNHN 2004-2024 (ex SMNS 21775), 1 specimen, 59.8 mm SL; same data as IRDNC uncat. – SMNS 21775, 1 specimen, 70.9 mm SL; same data as IRDNC uncat.

Distribution

New Caledonia (Grande Terre). Outside the area, Papua/Indonesia (former Irian Jaya); Fiji; American Samoa. This species occurs on coral rubble and soft coral habitats.

3.16 *Halicampus boothae* (Whitley, 1964)
Booth's pipefish

Micrognathus boothae Whitley, 1964: Whitley 1964: 162, fig. 3 (Lord Howe Island; holotype: AMS IB.5992). – Allen et al. 1976: 390 (Lord Howe Island; Fiji).
Halicampus boothae: Dawson 1985: 79–80, fig. 124 (revision; Lord Howe Island; Fiji; etc.). – Francis 1993: 159 (Lord Howe Island; Norfolk Island). – Francis & Randall 1993: 130 (Emily Bay and Slaughter Bay, Norfolk Island). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 3 m depth). – Myers 1999: 94 (Chesterfield Bank; etc.). – Kuiter 2000: 167, figs. A–C (West Pacific, eastern Australia and Coral Sea).

Material

Total: 6 specimens.
SW Pacific comparison material. **Lord Howe Island**: AMS IB.5992, holotype of *Micrognathus boothae* Whitley. GCRL 16333, 1 specimen. — **Norfolk Island**: NMNZ P.26899, 1 specimen; Slaughter Bay. NMNZ P.26917, 1 specimen; Emily Bay. — **Tonga**: USNM 334389, 1 specimen; E'ua Island, S of Aonua Harbour, 21°20′15″S 174°58′14″W, 3–13 m depth; J. T. Williams et al.; 2 Nov. 1993. – USNM 336727, 1 specimen; Ha'apai Group, E edge of Taniu Reef in caves and surge channels, 19°16′48″S 174°22′59″W, 1.6–7.3 m depth; J. T. Williams et al.; 10 Nov. 1993.

Distribution

Chesterfield Islands. Outside the area, eastern Australia, Lord Howe Island, Norfolk Island, Fiji, Tonga (**new record**). This species is found on rocky reefs with algae, at depths of 1.6–30 m.

3.17 *Halicampus brocki* Herald in Schultz et al., 1953
Brock's pipefish

Halicampus brocki Herald in Schultz et al., 1953: Herald in Schultz et al. 1953: 263–265, figs. 39G, 40 (Bikini Atoll, Amen Island/Marshall Islands, in lagoon, 30 feet/10 m depth; holotype: USNM 140235). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kuiter 2000: 164, figs. A–D (widespread West Pacific). – Dunning et al. 2001: 14 (North Queensland/Australia; taken by trawl fishery).

Distribution

New Caledonia? Outside the area, eastern Indonesia and Philippines east to Marshall Islands, north to Ryukyu Islands, south to Port Denison/Western Australia. Queensland/Australia; Middleton Reef. This species is found in coral or algae-rich habitats of inner reefs.

Remarks

No specimens from the area in collections.

The New Caledonian record by RIVATON et al. (1989: 74) still needs verification, though a New Caledonian occurrence of this species is possible.

3.18 *Halicampus dunckeri* (Chabanaud, 1929)

Duncker's pipefish

Micrognathus Dunckeri Chabanaud, 1929: CHABANAUD 1929: 170–171, figs. 2–3 (Amboine/Ambon Island, Maluku, Indonesia; holotype: MNHN 1929-0008).

Halicampus dunckeri: DAWSON 1985: 83, fig. 128 (revision; type A: Irian Jaya/Papua, Indonesia; Solomon Islands; etc.). – RIVATON et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – KULBICKI et al. 1994: 16 (Chesterfield Islands, 63–67 m depth). – LARSON & WILLIAMS 1997: 351 (Darwin Harbour, Northern Territory, Australia). – PAULUS 1999: 2274, fig. (review; SW Pacific; etc.; in distribution map). – KUITER 2000: 165, figs. A–E (review; Indonesia and Philippines). – DUNNING et al. 2001: 14 (South Queensland/Australia; taken by trawl fishery).

Material

Total: 2 specimens.

New Caledonia, Grande Terre, Province Sud: SMNS 21793, 1 specimen, 42.9 mm SL; 22°14′42″S 166°11′06″E, 10 m depth; B. RICHER DE FORGES & R/V 'Vauban', Cruise CAMPLAG1, St. DW.51; 25 May 1984. – MNHN 2004-2025 (ex SMNS 21795), 1 specimen, 40.7 mm SL; 22°29′12″S 166°26′18″E, 24 m depth; B. RICHER DE FORGES & R/V 'Vauban', Cruise CAMPLAG2, St. DW.65; 20 Aug. 1984.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre) (Fig. 14). Outside the area, Papua/Indonesia (former Irian Jaya); Solomon Islands; eastern Indonesia and Philippines east to Palau/Belau, south to Northern Territory and South Queensland/Australia. This species lives on coastal algae-rubble slopes at depths down to 25 m.

3.19 *Halicampus mataafae* (Jordan & Seale, 1906)

Samoan pipefish

Corythoichthys mataafae Jordan & Seale, 1906: JORDAN & SEALE 1906: 213, fig. 19 (off Mulinu'u, Upolu Island, Western Samoa; holotype: USNM 51724).

Syngnathus mataafae: GÜNTHER 1910: 431–432 (Samoa/Western Samoa; after JORDAN & SEALE 1906).

Micrognathus mataafae: WEBER & BEAUFORT 1922: 77, fig. 33 (Samoa/Western Samoa; etc.). – FOWLER 1928: 114 (Samoa/Western Samoa; etc.). – FOWLER 1934: 397 (Malakula/Vanuatu). – FOWLER 1949: 67 (Tongatabu/Tongatapu, Tonga; Tutuila/American Samoa; Malekula/Vanuatu). – HERALD in SCHULTZ et al. 1953: 262–263, fig. 39E (Upolu/Western Samoa; New Hebrides/Vanuatu; etc.).

Halicampus mataafae: DAWSON 1985: 89–90, fig. 136 (revision; Queensland/Australia;

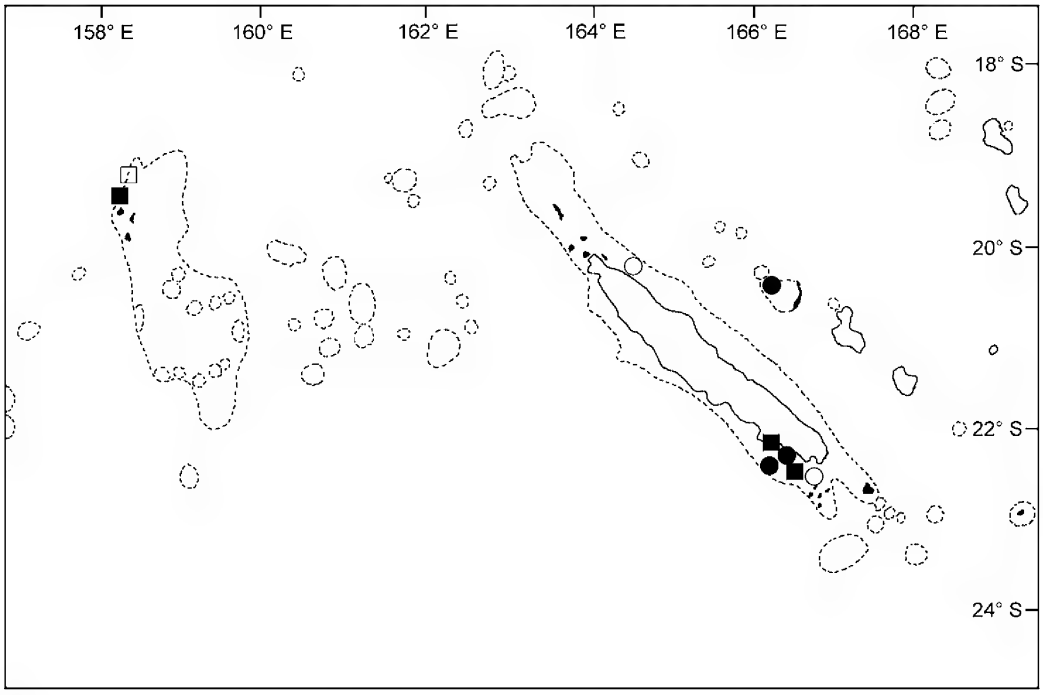

Fig. 14. Geographical distribution of *Halicampus dunckeri* (■), *H. mataafae* (□), *H. nitidus* (●) and *H. spinirostris* (○) in New Caledonian waters.

Madang/Papua New Guinea; Vanuatu; Fiji; etc.). – KULBICKI et al. 1994: 16 (Chesterfield Islands, 3 m depth). – KUITER 2000: 169, fig. (review; widespread Indo-West Pacific). – DUNNING et al. 2001: 15 (North Queensland/Australia; taken by trawl fishery).

Distribution

Chesterfield Islands (Fig. 14). Outside the area, Red Sea, East and South Africa, Aldabra and western Mascarenes east to Marshall Islands and Samoa, north to Taiwan and Palau/Belau, south to Queensland/Australia. Vanuatu; Fiji; Tonga. This species lives on coral reefs and rocks, from the intertidal zone to depths of 15 m.

Remarks

No specimens from the area in collections.

According to KUITER (2000: 169), there are many geographical variations and *H. mataafae* sensu lato probably comprises a species complex that is in need of revision.

3.20 *Halicampus nitidus* (Günther, 1873)

Glittering pipefish

Syngnathus nitidus Günther, 1873: GÜNTHER 1873: 103 (Bowen, Queensland, Australia; syntypes: BMNH 1873.4.3:76–77, 2 specimens).

Halicampus nitidus: DAWSON 1985: 90–91 (review; Grande Terre, New Caledonia, in distribution map, fig. 143, p. 94; Fiji; etc.). – RIVATON et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – MYERS 1999: 94 (New Caledonia; etc.). – KUITER 2000: 169, figs. A–B (review; West Pacific, northern Australia to southern Japan). – DUNNING et al. 2001: 15 (Central to North Queensland/Australia; taken by trawl fishery).

Material

Total: 15 specimens.

New Caledonia, Grande Terre, Province Sud: IRDNC uncat., 2 specimens, 55.5–63.7 mm SL; Île Sainte-Marie, 22°17′20″S 166°27′37″E, 3 m depth, fringing reef; M. Kulbicki; 19 Mar. 1999. – MNHN 1980-0580, 1 specimen; Nouméa, Île Maitre, N side; M.-L. Bauchot & L. A. Maugé; 1979. – MNHN 2004-2026 (ex SMNS 21732), 2 specimens; Île Sainte-Marie, 22°17′20″S 166°27′37″E, 3 m depth, fringing reef; M. Kulbicki; 19 Mar. 1999. – SMNS 21731, 5 specimens, 40.3–65.9 mm SL; Raoul Fol, Grande Rade, 22°15′01″S 166°25′25″E, 3 m depth, *Millepora* coral heads with beach rock and silt; M. Kulbicki; 25 Mar. 1999. – SMNS 21732, 3 specimens, 55.5–63.7 mm SL; same data as MNHN 2004-2026. – SMNS 21733, 1 specimen, 63.5 mm SL; Île Sainte-Marie, 22°18′25″S 166°27′40″E, 3 m depth, coral and sand; M. Kulbicki; 18 Mar. 1999. — **Loyalty Islands**: MNHN 1980-1061, 1 specimen; Ouvéa Atoll, Pleiades du Nord; M.-L. Bauchot & L. A. Maugé; 1979.

Distribution

New Caledonia (Grande Terre); Loyalty Islands (Ouvéa) (Fig. 14). Outside the area, Vietnam and Bali/Indonesia to Fiji, north to Ryukyu Islands, south to Western Australia and Queensland/Australia. This species lives on coral reef flats at depths of 2–20 m.

3.21 *Halicampus spinirostris* (Dawson & Allen, 1981)

Spiny-snout pipefish

Micrognathus spinirostris Dawson & Allen, 1981: Dawson & Allen 1981: 65, figs. 1–3 (off Tantabiddi Creek, North West Cape, Western Australia, 21°55′S 113°15′E, 10 m depth; holotype: WAM P0.26479-001). – Kuiter 2000: 16, figs. A–C (review; widespread Indo-West Pacific).

Material

Total: 2 specimens.

New Caledonia, Grande Terre, Province Nord: SMNS 21751, 1 specimen, 95.4 mm SL; NW lagoon, 20°18′18″S 164°32′15″E, 26 m depth; B. Richer de Forges & R/V 'Vauban', Cruise DRAGAGE VAUBAN, St. 892; 14 Jan. 1987. — **New Caledonia, Grande Terre, Province Sud**: MNHN 2004-2027 (ex SMNS 21730), 1 specimen, 87.7 mm SL; 22°46′42″S 166°47′36″E, 10–12 m depth; M. Kulbicki; 17 June 1986.

Distribution

New Caledonia (Grande Terre, **new record**) (Fig. 14). Outside the area, Sri Lanka to Samoa, north to Thailand; Western Australia; Queensland/Australia. The species is found on rock or in coral habitats at depths of 4.6–26 m.

3.22 *Hippichthys spicifer* (Rüppell, 1838)

Belly-barred pipefish

Syngnathus spicifer Rüppell, 1838: Rüppell 1838: 143, pl. 33, fig. 4 (Et Tur, Sinai, Gulf of Suez, Egypt; lectotype: SMF 937, as designated by Dor 1984: 77). – Günther 1910: 429–430 (Vavau/Vava'u, Tonga; etc.). – Weber & Beaufort 1922: 80–82, fig. 34 (Bismarck Archipelago/Papua New Guinea; etc.). – Fowler 1932: 5 (Suva/Viti Levu, Fiji). – Fowler 1934: 397 (New Hebrides/Vanuatu). – Seale 1935: 353 (Pago Pago/Tutuila, American Samoa; Suva/Viti Levu, Fiji; Guadalcanar/Guadalcanal, Tulagi/Florida Islands/Solomon Islands).

Micrognathus suvensis Herre, 1935: Herre 1935: 396 (Suva/Viti Levu, Fiji; holotype: FMNH 17229).

Bombonia spicifer: Ryan 1980: 61 (Fiji, in checklist).

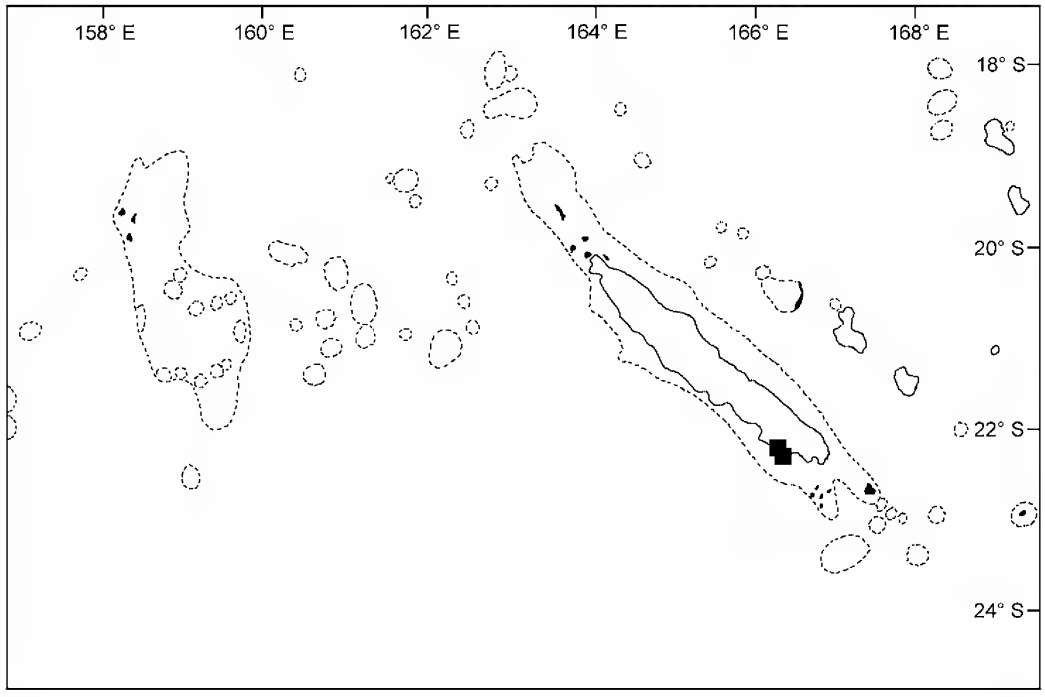

Fig. 15. Geographical distribution of *Hippichthys spicifer* in New Caledonian waters.

Hippichthys (Hippichthys) spicifer: Dawson 1985: 98–99, fig. 149 (review; Grande Terre, New Caledonia, in distribution map; Fiji; etc.).
Hippichthys spicifer: Blaber & Milton 1990: 262 (Solomon Islands). – Blaber et al. 1991: 18 (Kolombangara, Solomon Islands).
Hippichthys spicifer: Kuiter 2000: 180, figs. A–C (review; Indo-West Pacific, Red Sea and coast of East African east to Samoa, tropical Japan and to north-eastern Australia). – Dunning et al. 2001: 15 (North Queensland/Australia; taken by trawl fishery).

Material

Total: 26 specimens.

New Caledonia, Grande Terre, Province Sud: IRDNC uncat., 2 specimens, 55.9–85.0 mm SL; Grande Rade, Raoul Fol, 22°14′58″S 166°25′24″E, 3 m depth, *Millepora* coral heads with beach rock and silt; M. Kulbicki; 29 Mar. 1999. – MNHN 2004-2028, 3 specimens; same data as IRDNC uncat. – SMNS 21746, 9 specimens, 55.9–85.0 mm SL; same data as IRDNC uncat. – SMNS 21747, 11 specimens, 71.0–76.7 mm SL; Grande Rade, Raoul Fol, 22°15′01″S 166°25′25″E, 3 m depth, *Millepora* coral heads with beach rock and silt; M. Kulbicki; 25 Mar. 1999. – SMNS 23380, 1 specimen; Grande Rade, Île Nou, NE shore, 1 km ESE Nouville, 3.3 km WNW Nouméa, 22°15′52″S 166°24′40″E, fringing reef, 0.2–2.0 m depth; R. Fricke; 10 Nov. 2000.

Distribution

New Caledonia (Grande Terre) (Fig. 15). Outside the area, Red Sea, East and South Africa, Madagascar and Seychelles east to Caroline Islands and Samoa, north to southern Japan, south to New South Wales/Australia. Solomon Islands; Vanuatu; Fiji; Tonga. This species is found in shallow coastal and estuarine waters, including coral reefs with mud or silt bottom and mangrove areas.

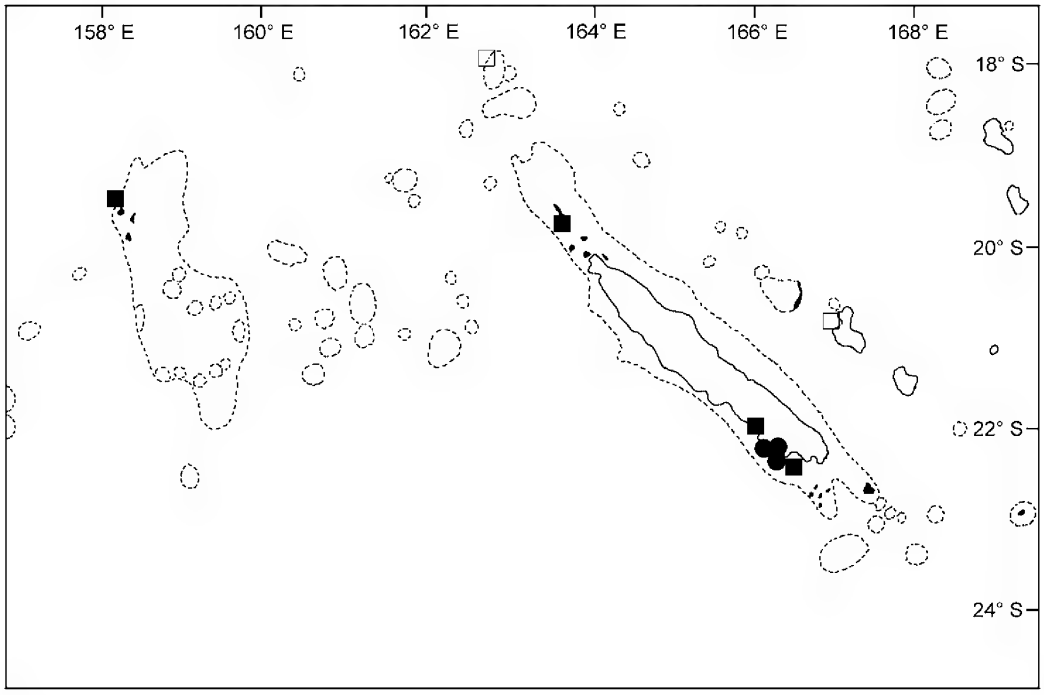

Fig. 16. Geographical distribution of *Hippocampus bargibanti* (●), *H. curvicuspis* n. sp. (■) and *H. pusillus* n. sp. (□) in New Caledonian waters.

3.23 *Hippocampus bargibanti* Whitley, 1970
Bargibant's seahorse

Hippocampus bargibanti Whitley, 1970: Whitley 1970: 294 (Nouméa, New Caledonia, 30 m depth; lectotype: AMS I0.15418-001, as designated by Gomon 1997: 249). – Gomon 1997: 249–252, figs. 2B, 5–6 (New Caledonia, Nouméa; redescription). – Randall et al. 1997: 501 (New Caledonia; etc.). – Lourie et al. 1999: 76–77 (revision; Nouméa, New Caledonia; etc.); 141 (photo of female from New Caledonia). – Laboute & Grandperrin 2000: 158, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Kuiter 2000: 60–61, figs. A–Q (review; New Caledonia; etc.). – Kuiter 2001: 305–306, fig. 7 (revision; Nouméa/Grande Terre, New Caledonia; Queensland/Australia; Papua New Guinea; Solomon Islands; etc.). – Lourie & Randall 2003: 286–287 (Nouméa, Canal Woodin/Grande Terre, New Caledonia; etc.).

Hippocampus sp. nov.: Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia; in checklist).

Material

Total: 5 specimens.

New Caledonia, Grande Terre, Province Sud: AMS I0.15418-001, 1 specimen, 20 mm TL, paralectotype of *Hippocampus bargibanti* Whitley; Nouméa, 22°16′S 166°26′E, 30 m depth; 1969. – AMS I0.15418-002, lectotype of *Hippocampus bargibanti* Whitley, 21 mm TL; Nouméa, 22°16′S 166°26′E, 30 m depth; 1969. – AMS I0.15997-001, 2 specimens, 21–22 mm TL; Canal Woodin, off Nouméa, 25 m depth; 1971. – AMS I0.19834-001, 1 specimen, 24 mm TL; Nouméa, lagoon, 22°16′S 166°26′E; 1969.

Distribution

New Caledonia (Grande Terre) (Fig. 16). Outside the area, northern Sulawesi/Indonesia to New Guinea, Great Barrier Reef/Australia and Solomon Islands, north to Bonin/Ogasawara Islands. The species occurs at depths of 16–40 m, it is a mimic of gorgonian corals of the genus *Muricella*. The species lives between the branches of the gorgonians.

3.24 *Hippocampus curvicuspis* **n. sp.** (Fig. 17)

New Caledonian thorny seahorse;
hippocampe épineux (French, New Caledonia)

Hippocampus histrix (non Kaup, 1853): Whitley 1961: 64 (New Caledonia/Nouméa region, Grande Terre). – Lourie et al. 1999: 100–101 (part: revision; New Caledonia); 136 (photo of female from New Caledonia by J. E. Randall). – Kuiter 2000: 30, figs. A–E (review; Coral Sea; etc.). – Kuiter 2001: 333, fig. 47 (part: revision; New Caledonia).

Hippocampus jayakari (non Boulenger, 1900): Fourmanoir 1971: 112 (Nouvelle-Calédonie/Grande Terre, New Caledonia).

Hippocampus hystrix (non Kaup, 1853): Rivaton 1989: 143 (part: lagon de Nouvelle-Calédonie/Grande Terre, New Caledonia). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kulbicki & Wantiez 1990: 125 (St. Vincent Bay, New Caledonia/Baie de Saint-Vincent, Grande Terre). – Wantiez 1992: 946 (North Lagoon/Îles Bélep, Grande Terre Group, New Caledonia). – Thollot 1996a: 9 (southwest lagoon of Grande Terre, New Caledonia). – Wantiez et al. 1996: 807 (South Bay, St. Vincent Bay, New Caledonia/Grande Terre).

?*Hippocampus hystrix* (non Kaup, 1853): Rivaton 1989: 143 (part: Îles Chesterfield/Chesterfield Islands). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 60–69 m depth).

Hippocampus kuda (non Bleeker, 1852): Laboute & Grandperrin 2000: 158, large fig. (part: Nouvelle-Calédonie/Grande Terre, New Caledonia).

Material

Total: 11 specimens.

Holotype. **New Caledonia, Grande Terre, Province Sud**: AMS IB.4464, 1 specimen; Nouméa region; R. Catala; 1955.

Paratypes. **New Caledonia, Grande Terre, Province Sud**: AMS IB.4155, 1 specimen; off Nouméa, 22°16′S 166°26′E; R. Catala; 1958. – MNHN 9194, 1 female, 97.6 mm body height; Nouméa; Vignes; 1875.

Other material. **New Caledonia, Grande Terre, Province Sud**: MNHN A.1819, 2 females, 50.8–55.7 mm body height; Heurtel; 1879. – MNHN A.2188, 1 specimen; Reveillère; 1880. – MNHN 1980-0284, 5 specimens, 29.3–54.3 mm body height; from stomach of yellowfin tuna; P. Fourmanoir; Dec. 1977.

Etymology

Curvus (Latin) means curved; *cuspis* (Latin) means spine. The name refers to the curved spines of the new species, including the nape spine and several spines on the superior and lateral trunk ridges.

Diagnosis

A large spiny seahorse with 17 dorsal fin rays, 17–18 pectoral fin rays, 11 trunk rings, 35–37 tail rings, subdorsal spines 3/0,1,0; nose spine moderately large, height about equal to pupil diameter; double spine above eyes moderately long, shorter than eye diameter; lateral head spine single; coronet raised, with 4 large spines; gill openings restricted, not close together near neck ridge; shoulder rings not confluent over neck ridge, not forming continuous collar; upper shoulder ring spine opposite

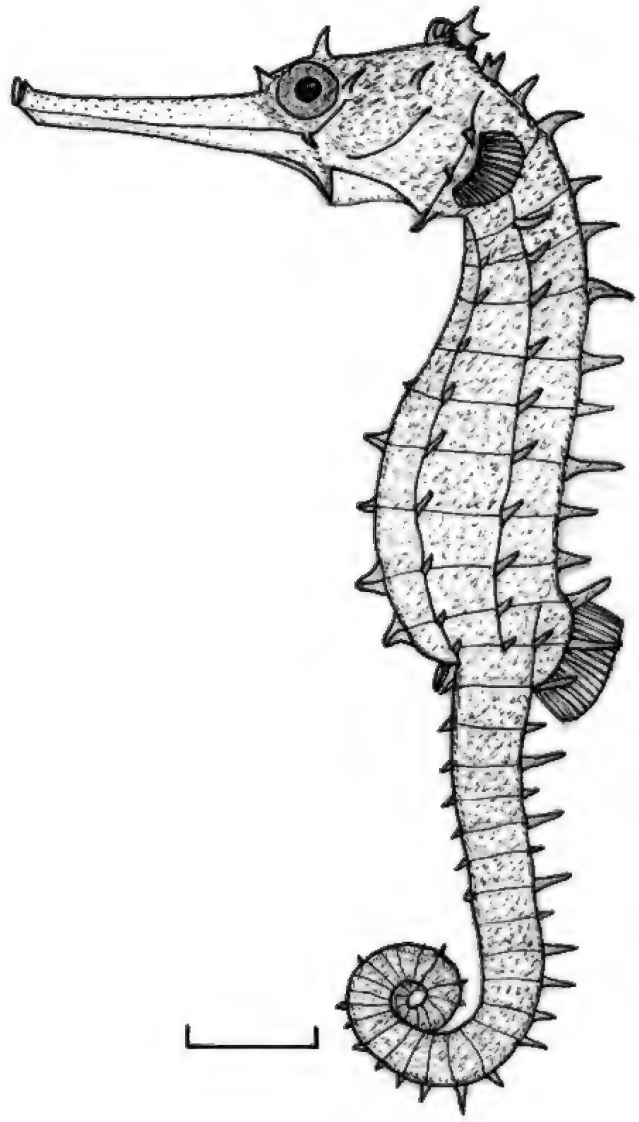

Fig. 17. *Hippocampus curvicuspis* n. sp.; holotype, AMS IB.4464, female, body height 106.5 mm; Nouméa, Grande Terre, New Caledonia. Lateral view (scale: 10 mm).

11th pectoral fin ray; trunk and tail ridges with numerous large, curved spines; snout length approximately 57 % of head length.

Description

D xvii (xvii); A iv (iv); P_1 xvii–xviii (xviii). Trunk rings 11 (11), tail rings 37 (35–37). Subdorsal spines 3/0,1,0 (3/0,1,0).

Head large, 73 (71) % of trunk length. Snout long, more than 1.5 times postorbital length, 57 (47) % of head length. Dorsal fin base over 2 trunk and 1 tail rings. Nose spine moderate, height about equal to pupil diameter. Snout dorsally without spines. Double spines above eye moderate, 2.5 in eye diameter (only slightly longer than pupil diameter). 1 large spine behind eye, 1 curved spine below eye. Lateral head

spine single. Gill openings restricted, not close together near neck ridge. Nape spine large, curved towards coronet (more or less straight in specimen photographed by LABOUTE & GRANDPERRIN 2000: 158, below, larger figure), close to coronet. Coronet raised, with 4 large spines (2 on each side). Shoulder rings not forming continuous collar, not confluent over neck ridge; 3 large spines on shoulder ring, upper spine at level of 1st pectoral fin ray, central spine at level of 11th (10th) pectoral fin ray, lower spine at ventral extent of ring. Neck ridge with large double spine. 1 large neck spine. Superior trunk ridge with enlarged curved spines on 1st, 4th, 7th, 10th–11th rings and with slightly shorter spines on the other rings. Lateral trunk ridge with a large curved spine on each ring except for the first. Inferior trunk ridge with slightly smaller, curved spines on all rings except for the first and second. Ventral trunk spines broad, blunt, on 6th–10th rings. Superior tail ridge spines well developed anteriorly and centrally, decreasing in length posteriorly, with enlarged spines on 1st, 3rd, 5th, 7th, 9th, 10th, 12th and 14th rings, and smaller spines on the 2nd, 4th, 6th, 8th, 11th, 13th, 15th–20th and on a few posterior rings. Inferior tail ridge continuous with inferior trunk ridge, with short spines which are directed downward on 1st–7th rings. Lateral line not detected.

Colour in life [after LABOUTE & GRANDPERRIN 2000: 158, "*Hippocampus kuda*" (non Bleeker, 1852), large figure]: Head and body brown, with yellow spines, and yellow blotches on top of the head, on the first trunk ring and on the anterior back. Snout brown, with vertical yellowish lines. Eye silvery, with a vertical blackish streak reaching from pupil to supraorbital spine.

Colour in alcohol (holotype): Head, trunk and tail uniform brown, snout lighter. The paratype is brownish yellow, with small dark brown spots.

Distribution

?Chesterfield Islands; New Caledonia (?Îles Bélep; Grande Terre) (Fig. 16). Apparently endemic to the area. The species occurs in seagrass beds at depths of more than 6 m.

Comparisons

This new species is very similar to *Hippocampus histrix* Kaup, 1856 (KAUP 1853: 229; Japan; syntypes: MNHN A.906, 1 specimen; RMNH D.1537, Japan, 1 specimen), but differs in its 35–37 tail rings (33–34 in *H. histrix*), the supraorbital spines which are much shorter than eye diameter (as long as eye diameter in *H. histrix*), coronet with 4 spines (5 spines in *H. histrix*), tail spines decreasing in length after 15th ring (after 20th ring in *H. histrix*). The new species is distinguished from *Hippocampus jugumus* Kuiter, 2001 (KUITER 2001: 306–307, fig. 9, Lord Howe Island, holotype: AMS IA.2424) and *H. pusillus* n. sp. in its 11 trunk rings (13 trunk rings in *H. jugumus* and *H. pusillus*), in the much longer trunk and tail spines (shorter and fewer in *H. jugumus* and *H. pusillus*), and the much longer snout which is 47–57 % of head length (40–47 % of head length in *H. jugumus* and *H. pusillus*), the shoulder ring not confluent over neck ridge not forming continuous collar (confluent and forming collar in *H. jugumus* and *H. pusillus*), and in its much larger height.

3.25 *Hippocampus pusillus* **n. sp.** (Fig. 18)
Pygmy thorny seahorse

Material

Total: 3 specimens.

Holotype. **Loyalty Islands**: MNHN 2004-2029, female, 28.3 mm body height; Lifou Island, Baie du Santal, W of Récif Shelter, off Pointe Lefèvre, 20°53′55″S 167°02′31″E; 20°54′18″S 167°01′47″E, coral gravel, coralline rocks and corals, 75–120 m depth (mostly 80 m depth); R. Fricke, R/V 'Alis', St. RF 00 NC 40, Cruise LIFOU 2000, St. DW.14; 19 Nov. 2000.

Paratypes. **Loyalty Islands**: SMNS 23384, 1 male, 32.9 mm body height; Lifou Island, Baie du Santal, off Notre-Dame de Lourdes, 4 km WSW Xepenehe, 20°47′04″S 167°06′30″E, 35–45 m depth; B. Richer de Forges, R/V 'Alis', Cruise LIFOU 2000, St. 42 (= RF 00 NC 32); 16 Nov. 2000. — **New Caledonia, Grande Terre, Province Nord**: MNHN 2002-3234, 1 male, 39.0 mm body height; S Grand Passage, 19°04′42″S 163°21′36″E, 228–228 m depth; R/V 'Vauban', Cruise MUSORSTOM 4, St. CP 152; 14 Sep. 1985.

Etymology

"*Pusillus*" (Latin) means dwarfish. The name refers to the small adult body size of the species.

Diagnosis

A pygmy spiny seahorse with 15 dorsal fin rays, 12–13 pectoral fin rays, 13 trunk rings, 34 tail rings, subdorsal spines 3/0,1,0; nose spine moderately large, height about equal to or slightly smaller than pupil; double spine above eyes moderately long, longer than pupil diameter; lateral head spine double and large; coronet raised, with 6 groups of 1–6 spines each; gill openings restricted, not reaching to neck ridge; shoulder rings confluent over neck ridge forming continuous collar; upper shoulder ring spine opposite 9th–11th pectoral fin rays; snout length approximately 45–47 % of head length.

Description

D xv (xv); A iv; P_1 xiii (xii–xiii). Trunk rings 13 (13), tail rings 34 (34). Subdorsal spines 3/0,1,0 (3/0,1,0).

Head small, 45 (66) % of trunk length. Snout short, about equal to or slightly longer than postorbital length, 45–47 % of head length. Dorsal fin base over 2.5 (3) trunk and 1 (1) tail rings. Nose spine moderate, height about equal to (smaller than) pupil diameter. Small spines dorsally on snout 2 (1). Double spines above eye long, height larger than (about same as) pupil diameter. Lateral head spines double. Gill openings restricted, not close together near neck ridge. Coronet raised, with 6 groups of 1–6 spines each, total spines 22 (Fig. 18B). Shoulder rings confluent over neck ridge, forming continuous collar; 2 (1) large spine(s) on shoulder ring, upper spine at level of 9th–11th pectoral fin ray, lower spine at ventral extent of ring. Neck ridge with large double spine. 1 large neck spine. Superior trunk ridge with enlarged blunt spines on 1st, 4th, 7th, 11th–13th rings. Lateral trunk ridge with a small to large spine on each ring except for the first. Inferior trunk ridge similar to lateral trunk ridge. Ventral trunk spines small to moderate, mostly directed downwards. Superior tail ridge spines well developed anteriorly, decreasing in length posteriorly, with enlarged spines on 1st, 3rd and 7th rings in the male holotype (on 1st, 3rd, 7th, 11th, 14th, 17th rings in the female paratype). Inferior tail ridge continuous with inferior trunk

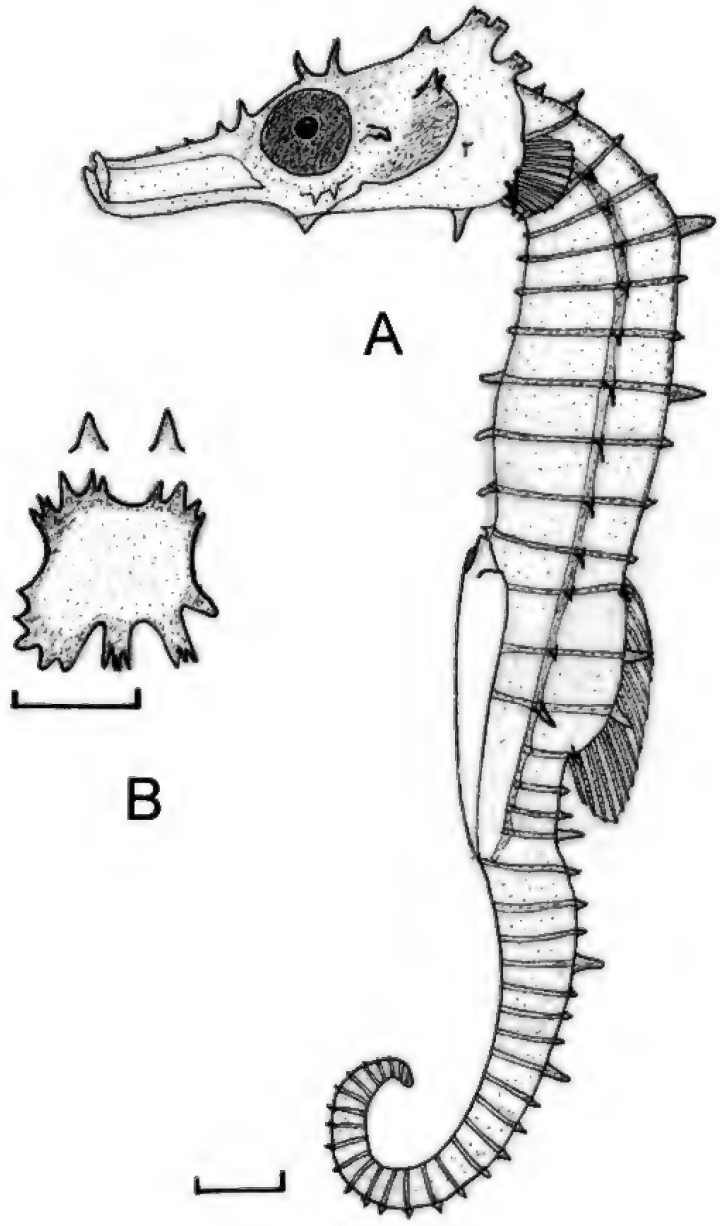

Fig. 18. *Hippocampus pusillus* n. sp.; holotype, MNHN 2004-2029, male, body height 28.3 mm; Loyalty Islands, Lifou, Baie du Santal, 75–120 m depth. **A**. Lateral view (scale: 2 mm). **B**. Coronet, dorsal view (scale: 1 mm).

ridge, without spines in the male holotype (with very short spines on anterior 1st–4th rings in the female paratype). Lateral line not detected.

Colour in life: This species is uniform pale yellow in life.

Colour in alcohol: Head and body plain yellowish white, eye dark grey.

Distribution

New Caledonia (Grand Passage); Loyalty Islands (Lifou) (Fig. 16). This new

species is known only from two stations in the Baie du Santal, and from Grand Passage it was dredged from scattered coral habitats at depths of 35–228 m.

Comparisons

Hippocampus pusillus n. sp. is similar to *Hippocampus jugumus* Kuiter, 2001; the two species differ from other species of *Hippocampus* in the combination of a small body size, the slender body shape, and the shoulder rings which are confluent over neck ridge forming a continuous collar. The two species share a very similar spine pattern, but differ in the number of dorsal fin rays (15 in *H. pusillus*, 20 in *H. jugumus*), pectoral fin rays (12–13 in *H. pusillus*, 16 in *H. jugumus*), the number of trunk rings (13 in *H. pusillus*, 12 in *H. jugumus*) and tail rings (34 in *H. pusillus*, 37 in *H. jugumus*); gill openings more restricted in *H. pusillus* than in *H. jugumus*, not close together near neck ridge; upper spine on shoulder ring positioned higher in *H. pusillus* (opposite 9th–11th pectoral fin ray in *H. pusillus*; opposite 16th ray in *H. jugumus*); inferior tail ridge without spines or with very small spines on the anterior rings in *H. pusillus*, but with spines on the anterior nine rings in *H. jugumus*; and the smaller angle of head to body in *H. pusillus*.

Another small species that was recently described, *Hippocampus colemani* Kuiter, 2003 (Kuiter 2003: 113–116; Lord Howe Island), is distinguished by its very deep trunk, a low number of tail rings (27–29 in *H. colemani*, 34 in *H. pusillus*), and its single gill opening (double in *H. pusillus*).

Remarks

This was a surprising finding of a sister species to *Hippocampus jugumus* Kuiter, 2001 from Lord Howe Island. While Kuiter (2001: 307) discussed that *H. jugumus* may be pelagic due to its broad angle between head and body, this is not true for *H. pusillus* which was dredged from deep coral habitats in the Baie du Santal, Lifou, Loyalty Islands.

3.26 *Hippocampus semispinosus* Kuiter, 2001 (Fig. 19)

Half-spined seahorse;
grand hippocampe, cheval marin (French, New Caledonia)

?Hippocampus sp.: Jouan 1861: 250 (Port-de-France, Nouvelle-Calédonie/Nouméa, Grande Terre, New Caledonia).

?Hippocampus kuda (non Bleeker, 1852): Fowler 1928: 115 (Port de France/Nouméa, Grande Terre, New Caledonia; etc.). – Whitley 1961: 64 (New Caledonia/Nouméa region, Grande Terre). – Plessis & Fourmanoir 1966: 125 (récif entre Prédour et Puen, Nouvelle-Calédonie/Grande Terre, New Caledonia). – Fourmanoir & Laboute 1976: 274 (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Lourie et al. 1999: 108–109 (revision; New Caledonia; etc.). – Myers 1999: 89 (New Caledonia; etc.). – Laboute & Grandperrin 2000: 158, small fig. (part: Nouvelle-Calédonie/Grande Terre); also upper right fig. on p 149.

?Hippocampus sp. nov.: Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist).

?Hippocampus fisheri: Lourie et al. 1999: 92–93, figs. (revision; part:?New Caledonia/Grande Terre; etc.).

Hippocampus semispinosus Kuiter, 2001: Kuiter 2001: 320, fig. 29 (Indonesia, East Alas Strait, 8°20′S, 116°50′E, 40–60 m depth; holotype: NTM S10749-006).

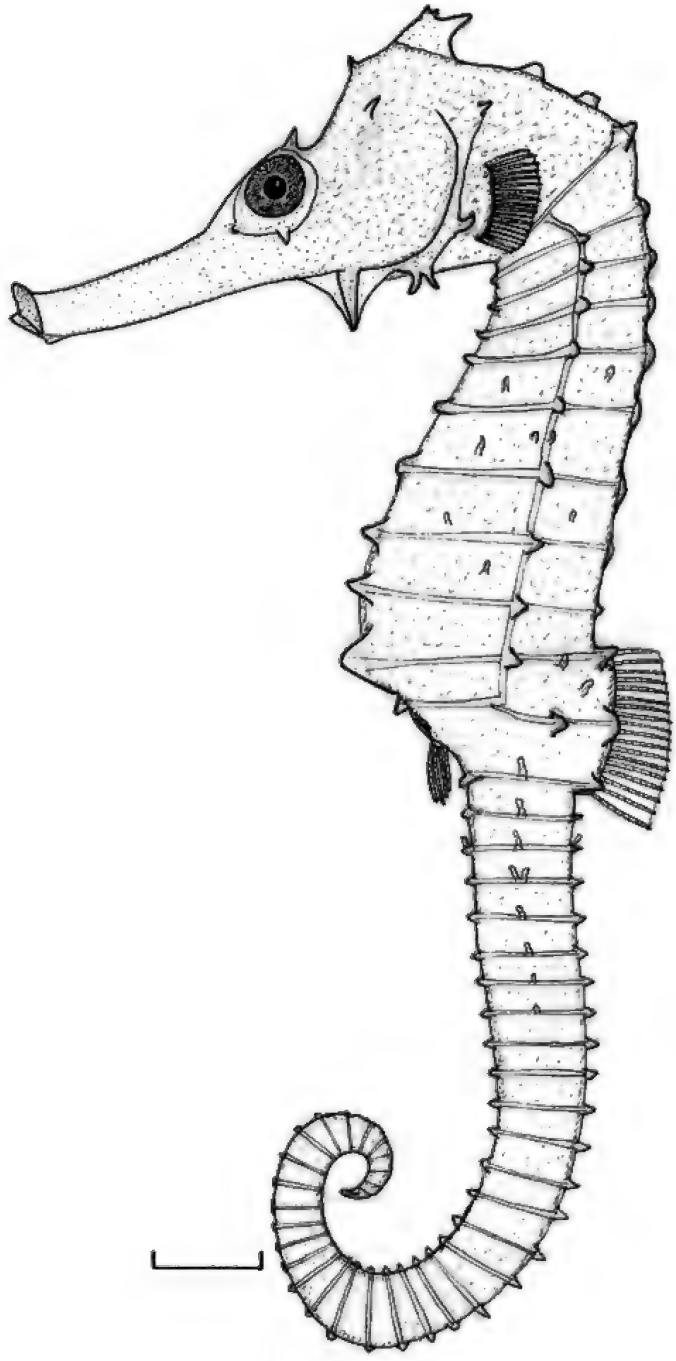

Fig. 19. *Hippocampus semispinosus* Kuiter, 2001; AMS IB.4463, female, body height 161.2 mm; New Caledonia, Grande Terre, Nouméa. Lateral view (scale: 10 mm).

Material

Total: 1 specimen.

New Caledonia, Grande Terre, Province Sud: AMS IB.4463, 1 specimen; R. CATALA; 1955.

Diagnosis

A large spiny seahorse with 18 dorsal fin rays, 18 pectoral fin rays, 11 trunk rings, 36 tail rings, subdorsal spines 3/0,1,0; nose spine absent, but a moderate nose crest present; a single spine above the eye, low, height smaller than pupil diameter; lateral head spine single; coronet raised, with 5 spines; gill openings restricted, not reaching to neck ridge; shoulder rings not confluent over neck ridge; upper shoulder ring spine right below gill opening, median shoulder ring spine opposite 13th–15th pectoral fin rays; snout long, its length approximately 54 % of head length.

Description of New Caledonian specimen

D xviii; A iv; P_1 xviii–xviii. Trunk rings 11, tail rings 36. Subdorsal spines 3/0,1,0.

Head large, 66.7 % of trunk length. Snout long, longer than postorbital length, 53.8 % of head length. Dorsal fin base over 2 trunk and 1 tail rings. No nose spine, but an elevated nose crest present. No small spines dorsally on snout. A single spine present above eye directed slightly backward, short, its height less than pupil diameter. Lateral head spine single, large, with a strong recurving tip. Nape spine small but distinct. A small spine below eye. Gill openings restricted, not close together near neck ridge. Coronet raised, with a total of 5 spines. Shoulder rings not confluent over neck ridge, 4 large spines on shoulder ring, upper spine just below gill opening, median spine opposite 13th–15th pectoral fin ray base, a pair of smaller spines at ventral extent of ring. Neck ridge raised above gill opening with rugose tips, and ending posteriorly with a spine-like tubercle. Superior trunk ridge with blunt knobs and enlarged blunt spines on 1st and 9th–11th rings. Lateral trunk ridge with enlarged blunt spines on each ring increasing in length posteriorly. Inferior trunk ridge with large, broad, blunt spines with the tips directed upwards, increasing in height posteriorly. Superior tail ridge spines well developed anteriorly, decreasing in length after the 17th ring. Inferior tail ridge continuous with inferior trunk ridge, similar to superior tail ridge, decreasing in length after the 22nd ring. Trunk with small irregular dermal flaps. Anterior tail with 1–2 dermal flaps on the mid of 1st–8th ring.

Colour in life [according to illustrations in Laboute & Grandperrin 2000: 149, upper right; 158, *Hippocampus kuda* (non Bleeker, 1852), small fig.]: Head and body yellowish brown, back may bear white saddles. Eye dark grey. Snout dark brown, with two thin vertical whitish lines. Sides of body may be scattered with large dark brown spots.

Distribution

New Caledonia (Grande Terre). Outside the area, southern Indonesia to Arafura Sea.

Remarks

This New Caledonian specimen differs from Indonesian/northern Australian *Hippocampus semispinosus* in having a small spine below the eye (not present in Northern Australian material), in having 4 spines on the shoulder ring (3 in Indonesian/northern Australian populations), and 18 pectoral fin rays (16–17 in Indonesian/northern Australian populations). As the diagnostic characters otherwise agree, specimens from both areas are considered conspecific.

The New Caledonian records of *Hippocampus kuda* (non Bleeker, 1852) and *H. fisheri* may be in part attributable to *H. taeniopterus* (see below).

3.27 *Hippocampus taeniopterus* Bleeker, 1852 (Fig. 20)
Common Seahorse

Hippocampus taeniopterus Bleeker, 1852: Bleeker 1852: 306 (Amboina/Ambon, Maluku, Indonesia; 3 syntypes, not found). – Kuiter 2000: 45, figs. A–E (review; Moluccan seas to Sulawesi and Bali, and to north and north-eastern Australia). – Kuiter 2001: 314–315, fig. 21 (review; Moluccan Sea, Papua New Guinea, tropical Australia).

Material

Total: 2 specimens.
New Caledonia, Grande Terre: MNHN 9197, 1 specimen; Braguay.
SW Pacific comparison material. **Vanuatu:** MNHN 1969-0037, 1 female, 164.6 mm body height; Espiritu Santo Island; Aubert de la Rue; Aug. 1934.

Diagnosis

A large spiny seahorse with 17–18 dorsal fin rays, 16–18 pectoral fin rays, 11 trunk rings, 34–36 tail rings, subdorsal spines 3–4/0,1,1 , 0,1,0,1 or 0,1,1,1; nose spine small; shoulder ring spines small, knob-like, upper spine at gill opening, lower spine single, knob-like; body and tail spines rounded and knob-like; two minute and a small spine above the eye; coronet raised, with 5 spines; gill openings restricted, not reaching to neck ridge; shoulder rings not confluent over neck ridge; snout moderate, its length approximately 49 % of head length.

Distribution

New Caledonia (Grande Terre). Outside the area, southern Indonesia to New Guinea and northern Australia; Vanuatu. Usually found along margins of seagrass beds, rarely deeper than 15 m (Kuiter 2000: 45).

Remarks

This species has often been synonymised with *Hippocampus kuda*, but was considered distinct by Kuiter (2000, 2001) on the basis of lacking dermal appendages on the head spines, smaller tubercles on the superior ridges, and slightly different meristics. *Hippocampus taeniopterus* apparently replaces *H. kuda* east of Wallace's Line.

3.28 *Micrognathus brevicorpus* **n. sp.** (Fig. 21)
Short-bodied pipefish

Micrognathus andersonii (non Bleeker, 1858): Dawson 1985: 122–123 (review; Grande Terre, New Caledonia, in distribution map). – Zug et al. 1989: 15 (Rotuma). – Thollot 1996a: 9 (south-west lagoon of Grande Terre, New Caledonia). – Thollot 1996b: 281 (lagon sud-ouest/SW lagoon, Grande Terre, New Caledonia).

Material

Total: 6 specimens.
Holotype. **New Caledonia, Grande Terre, Province Sud**: MNHN 2004–2030, male, 64.3 mm SL; Île Sainte-Marie, 22°17′26″S 166°27′36″E, 1–3 m depth, fringing reef; M. Kulbicki; 9 Apr. 1999.

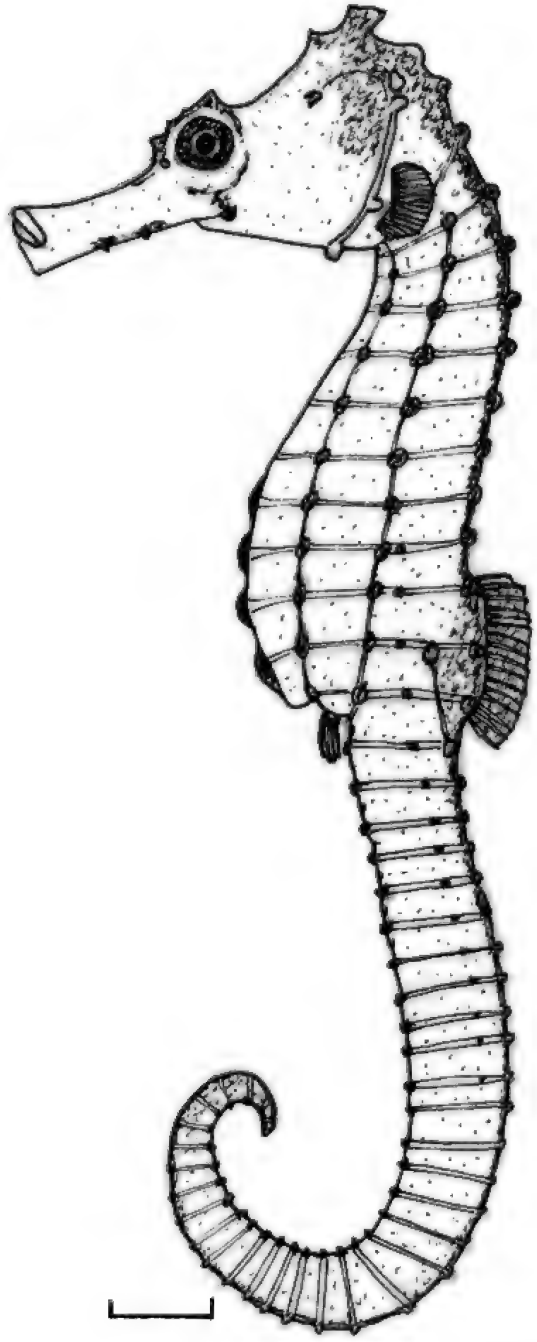

Fig. 20. *Hippocampus taeniopterus* Bleeker, 1852; MNHN 1969-0037, female, body height 164.6 mm; Vanuatu, Espiritu Santo. Lateral view (scale: 10 mm).

Paratypes. **New Caledonia, Grande Terre, Province Sud**: AMS I0.18446-001, 1 female, 49.2 mm SL; near Anse Vata, Nouméa, 22°16′S 166°26′E, 1 m depth; P. COLEMAN; 1971. – AMS I0.38050-004-005, 1 male and 1 female, 49.2–54.8 mm SL; Nouméa, 22°16′S 166°26′E; 1977. – SMNS 21750, 2 specimens, 60.8–73.2 mm SL; same data as the holotype.

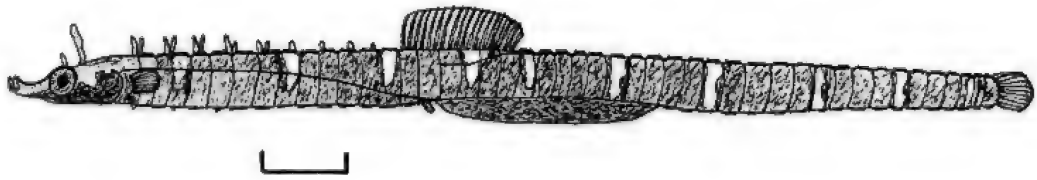

Fig. 21. *Micrognathus brevicorpus* n. sp.; holotype, MNHN 2004-2030, male, 64.3 mm SL; New Caledonia, Grande Terre Group, Île Sainte-Marie, 1–3 m depth. Lateral view (scale: 5 mm).

Etymology

Brevis (Latin) means short; *corpus* (Latin) means trunk. The name of the new species refers to its relatively short trunk with a low number of trunk rings.

Diagnosis

A species of *Micrognathus* with 10–14 pectoral fin rays, 20–24 dorsal fin rays, 14–17 + 29–32 body rings (total 44–49), total subdorsal rings 5.5–7, snout length 2.6–2.9 in head length, snout depth 6.1–7.0 in snout length, and with a long postorbital dermal flap which is longer than eye diameter.

Description

D xxii (xx–xxiv); A iv (iv); P xi (x–xiv); C x (x). Trunk rings 15 (14–17), mean 15.2; tail rings 31 (29–32); total rings 46 (44–49); subdorsal rings 1 + 5 (1 + 4.5–6); total subdorsal rings 6 (5.5–7).

Head 9.8 (8.0–10.2) in SL (9.8–10.5 % of SL). Median dorsal snout ridge entire, concave in lateral profile, not strongly elevated, without bony knobs or spines. Longitudinal opercular ridge obsolete. Other head ridges low. Head without spines, denticulations or serrations. Snout length 2.6 (2.7–2.9) in head length (4.0–4.6 % of SL). Snout depth 6.8 (6.1–7.0) in head length (1.4–1.7 % of SL), 2.6 (2.1–2.6) in snout length. Eye diameter 4.0 (4.6–5.6) in head length (2.1–2.6 % of SL).

Superior trunk and tail ridges discontinuous, inferior trunk ridge ends on anal ring, lateral trunk ridge continuous with inferior tail ridge. Principal body ridges low but elevated; rings without spines, notches or serrations between anterior and posterior margins; one dermal flap above eye, another long one in preorbital region (its length approximately 1.7 times eye diameter), and pairs on rings before dorsal fin origin. Margins of head and body ridges entire, neither denticulate nor serrate. Body depth 18.4 (16.8–21.0) in SL (4.8–5.9 % of SL). Body width 24.7 (21.8–22.9) in SL (4.0–4.6 % of SL). Preanus length 2.4 (2.7–2.8) in SL (36–42 % of SL). Principal tail ridges behind dorsal fin with a slightly elevated crest. Brood pouch under tail rings 1–17, pouch plates and folds present, everted pouch-closure.

Dorsal fin origin on trunk; dorsal fin base not elevated. Dorsal fin base length 8.9 (9.3–11.7) in SL (8.5–11.2 % of SL). Predorsal length 2.6 (2.4–2.6) in SL (37.8–41.6 % of SL). Pectoral fin length 43 (39–47) in SL (2.1–2.4 % of SL). Prepectoral length 8.0 (7.6–8.6) in SL (11.7–13.1 % of SL). Caudal fin length 32 (28–49) in SL (2.1–3.3 % of SL).

Colour in alcohol: Head, trunk and tail dark brown, snout and dorsal parts of head pale, eye dark grey; trunk with 3 vertical whitish bars reaching from back to

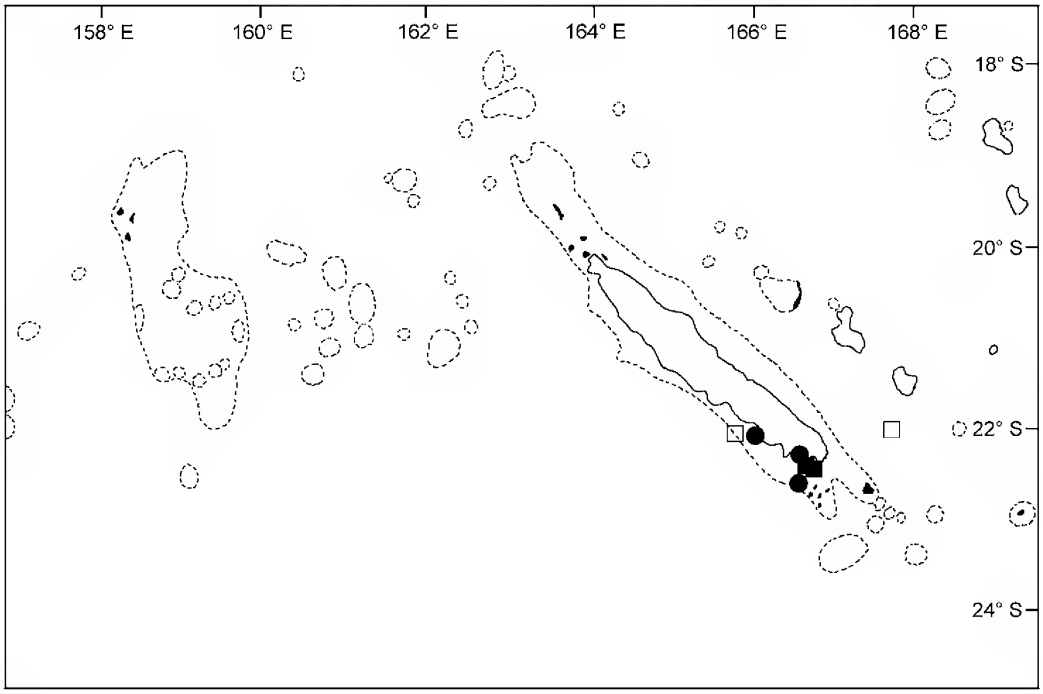

Fig. 22. Geographical distribution of *M. brevicorpus* (■), *M. micronotopterus* (●) and *M. natans* (□) in New Caledonian waters.

sides, bordered with black; tail with 2 half vertical bars and 4 complete vertical bars bordered with black. Brood pouch blackish.

Distribution

New Caledonia (Grande Terre) (Fig. 22). This species possibly has a wider distribution in the tropical West Pacific. It is most commonly found in shallow coral reef habitats at depths of less than 2 m, including intertidal areas.

Comparisons

This new species is similar to *Micrognathus andersonii* (Bleeker, 1858) (Bleeker 1858: 465, Kokos-eilanden/Cocos-Keeling Islands, holotype RMNH 7227, as *Syngnathus andersonii*; valid as *Micrognathus andersonii*, see Dawson 1982a: 672) but differs in its lower mean number of trunk rings (15.0 in *M. brevicorpus*, 16.5 in *M. andersonii*), its 4.5–6 subdorsal rings on tail (2.5–5 in *M. andersonii*), and its unusually long postorbital dermal flap (shorter than eye diameter in *M. andersonii*). The new species is distinguished from *M. micronotopterus* (Fowler 1938) in the number of dorsal fin rays (20–24 in *M. brevicorpus*, 17–19 in *M. micronotopterus*), in its 4.5–6 subdorsal rings on tail (2.25–3.75 in *M. micronotopterus*), and in its slightly shorter head (8.0–10.2 in SL in *M. brevicorpus*, 7.2–8.9 in *M. micronotopterus*).

Remarks

According to KUITER (2000: 149), *Micrognathus andersonii* (Bleeker, 1858) is probably restricted to Indonesia, and part of a species complex with several geographical variations. This new species belongs to the complex; it is considered as distinct from Indonesian *Micrognathus andersonii*. A broader revision of this group is needed to distinguish and define other species in the *Micrognathus-andersonii*-complex.

3.29 *Micrognathus micronotopterus* (Fowler, 1938)
Tidepool pipefish

Syngnathus micronotopterus Fowler, 1938: FOWLER 1938: 42, fig. 14 (Camino Island, near Daet Point, Luzon, Philippines; holotype: USNM 94082).
Micrognathus micronotopterus: LARSON & WILLIAMS 1997: 351 (Darwin Harbour, Northern Territory, Australia).

Material

Total: 3 specimens.
New Caledonia, Grande Terre, Province Sud: IRDNC uncat., 1 specimen, 57.9 mm SL; 22°16′08″S 166°28′58″E, 2 m depth, seagrass; M. KULBICKI; 31 Jan. 1996. – MNHN 2004-2031 (ex SMNS 21762), 1 specimen, 45.7 mm SL; Grande Rade, Numbo, 22°14′52″S 166°24′56″E, 1–3 m depth, beach rock; M. KULBICKI; 14 Apr. 1999. – SMNS 21742, 1 specimen, 58.0 mm SL; 22°16′08″S 166°28′58″E, 2 m depth, seagrass; M. KULBICKI; 31 Jan. 1996.

Distribution

New Caledonia (Grande Terre) (Fig. 22). Outside the area, Indonesia north to southern Japan, south to northwestern Australia. This species inhabits tidepools and shallow coastal waters down to about 6 m depth, and is often found amongst sparse seagrass and coral rubble with algae.

3.30 *Micrognathus natans* Dawson, 1982
Offshore pipefish

Micrognathus natans Dawson, 1982: DAWSON 1982a: 682, figs. 12–13 (Beqa Island, Fiji; holotype: AMS I0.20390-012). – DAWSON 1985: 125–126 (review; Grande Terre, New Caledonia). – RIVATON et al. 1989: 74 (Nouvelle-Caledonie/New Caledonia, in checklist). – KUITER 2000: 150, figs. A–B (review; West Pacific, Philippines to Queensland/Australia and Fiji). – DUNNING et al. 2001: 15 (North Queensland/Australia; taken by trawl fishery).

Material

Total: 2 specimens.
New Caledonia, Grande Terre, Province Sud: AMS I0.19762-039, 1 specimen, 35 mm SL; 22°03′S 167°44′E, over 800 m depth; 1971. – SMNS 21772, 1 specimen, 47.2 mm SL; 22°02′48″S 166°01′42″E, 13 m depth; B. RICHER DE FORGES & R/V 'Vauban', Cruise CAMPLAG3, St. DW.187; 19 Sep. 1984.

Distribution

New Caledonia (Grande Terre) (Fig. 22). Outside the area, Philippines; Great Barrier Reef/Australia to Fiji. This species is found on muddy or silty substrates at depths of 13–25 m. It also occurs offshore in the pelagial.

3.31 *Micrognathus pygmaeus* Fritzsche, 1981
Pygmy pipefish; thorn-tailed pipefish (Australia)

Micrognathus brevirostris (non Rüppell, 1838): Fowler 1934: 397 (Tulagi/Solomon Islands; New Hebrides/Vanuatu). – Fowler 1949: 67 (Suva/Viti Levu, Fiji; New Hebrides/Vanuatu). – Herald in Schultz et al. 1953: 260 (Cape York/Queensland, Australia; Solomon Islands; New Hebrides/Vanuatu; New Caledonia/Grande Terre; Suva/Fiji; Tongatabu/Tongatapu, Tonga; etc.). – Plessis & Fourmanoir 1966: 125 (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Fourmanoir 1976: 49 (St. Vincent/Saint-Vincent, Grande Terre, New Caledonia). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kulbicki et al. 1994: 16 (Chesterfield Islands, 7 m depth).

Micrognathus pygmaeus Fritzsche, 1981: Fritzsche 1981: 771, fig. 1 (lagoon 1–2 km E of Papeete, Taone, Tahiti, Society Islands, ca. 3 m depth; holotype: USNM 207933). – Kuiter 2000: 150, figs. A–B (review; widespread West Pacific to central Pacific).

Micrognathus brevirostris pygmaeus: Dawson 1985: 123–124 (review; Grande Terre, New Caledonia, in distribution map, fig. 187, p. 126). – Myers 1999: 94 (New Caledonia; etc.).

Material

Total: 7 specimens.

New Caledonia, Grande Terre, Province Nord: MNHN 2004-2032 (ex SMNS 22792), 1 specimen, 48.2 mm SL; 4 km NW Tao, 25 km NW Hienghène, 30°31′49″S 164°47′01″E, seaward coral reef, 0.2–3.5 m depth; R. Fricke; 13 May 2000. – SMNS 22694, 1 specimen, 51.8 mm SL; Babouillat, 3 km S of old wharf, 25 km NW Koumac, 20°24′10″S 164°05′40″E, ocean side reef, corals on coral rubble, 0.5–2.5 m depth; R. Fricke; 11 May 2000. – SMNS 22747, 1 specimen, 84.5 mm SL; 1.5 km E of mouth of Rivière Ouaième, 14 km NW Hienghène, 20°36′30″S 164°51′50″E, black rocks and boulders with few algae, 0–6.0 m depth; R. Fricke; 12 May 2000. — **New Caledonia, Grande Terre, Province Sud**: MNHN 9297, 1 specimen; Nouméa; Vignes. SMNS 23457, 1 specimen, 45.3 mm SL; Île Sainte-Marie, N end, 3.8 km ESE Nouméa, 22°17′40″S 166°27′50″E, fringing reef, 0.1–2.1 m depth; R. Fricke; 25 Nov. 2000. – USNM 323999, 1 specimen; Nouméa, Pointe Cluxel, 22°18′30″S 166°27′24″E, 0.5–2.0 m depth; J. T. Williams & G. Mou-Tham; 7 Nov. 1991. – USNM 324000, 1 specimen; Nouméa, Île Nou, lagoon side, 22°15′24″S 166°22′54″E, 0.5–2.0 m depth; J. T. Williams & G. Mou-Tham; 8 Nov. 1991. — **New Caledonia, Île des Pins**: SMNS 22856, 1 specimen, 59.1 mm SL; N end of Baie de Ouaméo, at Tèkèrè, 22°34′05″S 167°25′23″E, rocks and patch reef, 0–2.5 m depth; R. Fricke; 16 May 2000.

Distribution

Chesterfield Islands; New Caledonia (Grande Terre; Île des Pins, **new record**) (Fig. 23). Outside the area, Eastern Indonesia and Belau to Marshall and Society Islands, north to Ryukyu Islands. Queensland/Australia; Solomon Islands; Vanuatu; Fiji; Tonga. This species occurs on sheltered inner reefs in lagoons, at depths of 0–6 m.

3.32 *Microphis argulus* (Peters, 1855)
Flat-nosed pipefish

Syngnathus argulus Peters, 1855: Peters 1855: 278 (streams of St. Johanna, Anjouana Island/Anjouan, Comores; replacement name for *Syngnathus argus* Peters, 1852, preoccupied by *Syngnathus argus* Richardson, 1840; syntype: ZMB 6232, 1 specimen).

Coelonotus argulus: Fowler 1949: 65 (Hiva Oa/Marquesas Islands). – Ryan 1980: 61 (Taveuni/Fiji; in checklist).

Microphis (Coelonotus) argulus: Dawson 1985: 130–131, fig. 195 (revision; New Britain/Papua New Guinea; Solomon Islands; Fiji; Samoa; etc.).

Microphis argulus: Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Keith et al. 2002: 98–99, figs. (Marquesas Islands; etc.).

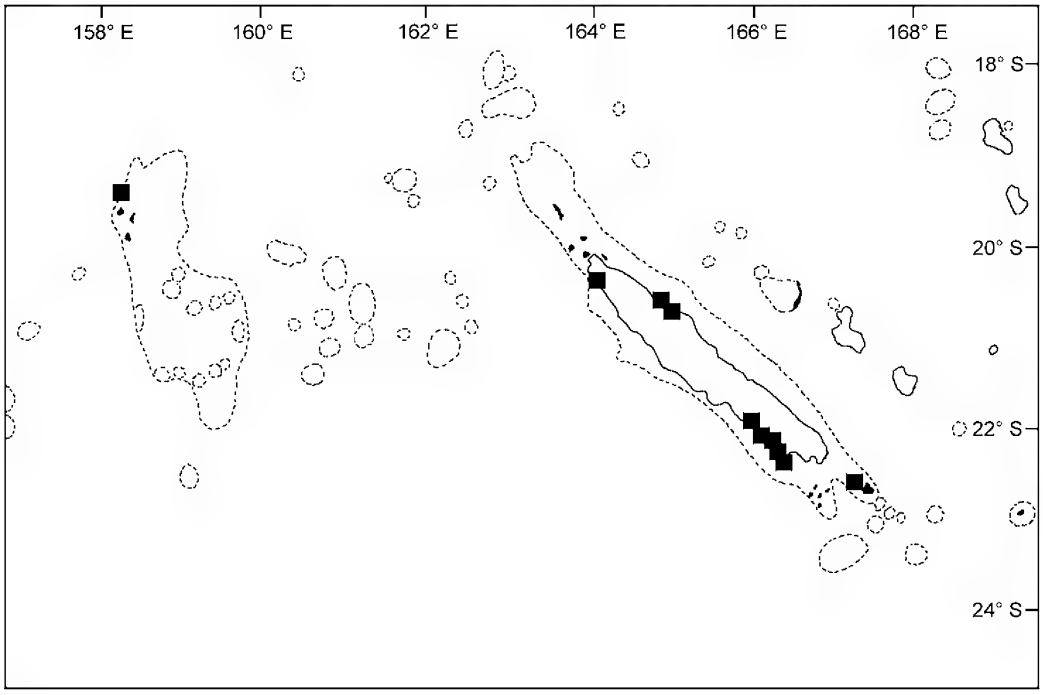

Fig. 23. Geographical distribution of *M. pygmaeus* in New Caledonian waters.

Material

Total: 1 specimen.

Chesterfield Islands: SMNS 21744, 1 specimen, 98.1 mm SL; NE lagoon, 19°10′47″S 158°37′06″E, 38 m depth, sand; B. Richer de Forges & R/V 'Coriolis', Cruise CHALCAL1, St. D.24; 18 July 1984.

Distribution

Chesterfield Islands (Fig. 24). Outside the area, Comores and western Mascarenes; Indonesia; Ryukyu Islands; New Guinea and Solomon Islands east to Marquesas Islands. Fiji.

3.33 *Microphis brachyurus* (Bleeker, 1853)

Shorttail river pipefish

Syngnathus brachyurus Bleeker, 1853: Bleeker 1853b: 16 [Batavia, Panimbang, West Java/Indonesia; lectotype: BMNH 1867.11.28:364, as designated by Dawson (1979: 469); however, Roberts (1993: 36) indicates that Bleeker's description was based on a drawing left by P. Bleeker in Java].

Microphis jouani Duméril, 1870: Duméril 1870: 592 (Nouvelle-Calédonie/Grande Terre; holotype: MNHN 1519).

Doryichthys brachyurus: Schmeltz 1874: 38 (Rarotonga/Cook Islands; Viti-Inseln/Fiji). – Schmeltz 1879: 61 (Rarotonga/Cook Islands; Viti-Inseln/Fiji). – Pöhl 1884: 41 (Viti/Fiji). – Günther 1910: 433 (Aneiteum/Aneityum, Vanuatu; Ovalau/Fiji; Vavau/Vava'u, Tonga; Huahine, Tahiti/Society Islands; Raratonga/Rarotonga, Cook Islands; Samoa; etc.).

Microphis brachyurus: Duncker 1915: 45–45 (revision; Neu-Guinea/Papua New Guinea; Bismarckarchipel/Bismarck Archipelago, Papua New Guinea; Moreton Bay/Queensland, Australia; Neukaledonien/Grande Terre, New Caledonia; Viti-Inseln/Fiji; Tonga-In-

seln/Tonga; Samoa; Cook-Inseln/Cook Islands; Gesellschaftsinseln/Society Islands; etc.). – Weber & Beaufort 1922: 44–46, fig. 21 (New Caledonia; Fidji/Fiji; Tonga; Samoa; Cook Islands; Society Islands; etc.). – Whitley 1927: 4 (Fiji; in checklist). – Fowler 1934: 397 (Tahiti, Moorea/Society Islands; Ysabel/Solomon Islands; Raiatea/Society Islands). – Fowler 1949: 66 (Moorea/Society Islands; Tahiti/Society Islands; Nuku Hiva/Marquesas Islands; Aneityum/Vanuatu; Apia/Upolu, Western Samoa; etc.). – Kuiter 2000: 178, fig. (review; widespread in West Pacific). – Dunning et al. 2001: 15 (North Queensland/Australia; taken by trawl fishery).

Doryrhamphinarum brachyurum: Fowler 1928: 111–112, fig. 22 (review; Viti Islands/Fiji; Ovalau/Fiji; Vavau/Vava'u, Tonga; Rarotonga/Cook Islands; Samoa; New Caledonia; etc.). – Fowler 1931: 323 (Rarotonga/Cook Islands; Viti/Fiji).

Coelonotus liaspis (non Bleeker, 1853): Fowler 1931: 323, fig. 1 (Raiatea/Society Islands).

Oostethus brachyurus: Ryan 1980: 61 (SW of Suva/Viti Levu, Fiji; in checklist).

Microphis (Oostethus) brachyurus brachyurus: Dawson 1985: 138–139 (review; Grande Terre, New Caledonia, in distribution map; Solomon Islands; Vanuatu; Fiji; etc.).

Microphis brachyurus brachyurus: Marquet et al. 1997: 29 (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Keith et al. 2002: 100–101, figs. (Îles de la Société/Society Islands; etc.). – Marquet et al. 2003: 154–155, figs. (Province Nord et Sud, Nouvelle-Calédonie/New Caledonia; distribution; etc.).

Material

Total: 2 specimens.

New Caledonia, Grande Terre: MNHN 1992-1339, 1 specimen, 178 mm SL; Tite River; B. Séret; 1991. – MNHN 2000-1284, 1 specimen; Nehu River; P. Keith, G. Marquet & E. Vigneux; 6 Apr. 1999.

Distribution

New Caledonia (Grande Terre) (Fig. 24). Outside the area, Sri Lanka to Society and Marquesas Islands, north to southern Japan. Queensland/Australia; Solomon Islands; Fiji; Tonga; Western Samoa.

3.34 *Microphis brevidorsalis* (Beaufort, 1913)

Stream pipefish

Doryrhamphus brevidorsalis Beaufort, 1913: Beaufort 1913: 103 (stream near Kajeli, Buru Island, Indonesia; holotype: ZMA 109184).

Microphis (Lophocampus) brevidorsalis: Dawson 1985: 133, fig. 198 (revision; Milne Bay, Bismarck Sea/Papua New Guinea; Guadalcanal/Solomon Islands; Fiji; etc.).

Microphis brevidorsalis: Kuiter 2000: 173, fig. (review; Indonesia and into Pacific, to Solomon Islands, and Fiji).

Material

Total: 9 specimens.

New Caledonia, Grande Terre, Province Sud: IRDNC uncat., 1 specimen, 49.0 mm SL; Baie Chambeyron, Presqu'île de Ouano (Plage Ouano), 26 km W Boulouparis, 100 km NW Nouméa, 21°51′38″S 165°48′24″E, 0.3–0.9 m depth at low tide, lagoon, sand and silt, seagrass, patches of live corals; R. Fricke; 13 Nov. 1997. – MNHN 2004-2033, 1 specimen; same data as IRDNC uncat. – SMNS 19408, 1 specimen, 53.2 mm SL; same data as IRDNC uncat. – SMNS 21765, 1 specimen, 44.6 mm SL; Grande Rade, 22°14′04″S 166°24′01″E, 2 m depth, coral and sand; M. Kulbicki; 2 Apr. 1999.

SW Pacific comparison material. **Solomon Islands**: SU 24179, 2 specimens; Guadalcanal. — **Fiji**: MNHN 2000-5180, 3 specimens; Suva area, Viti Levu Island; R/V 'Alis', Cruise SUVA 2, St. BS 49; 20 Oct. 1998.

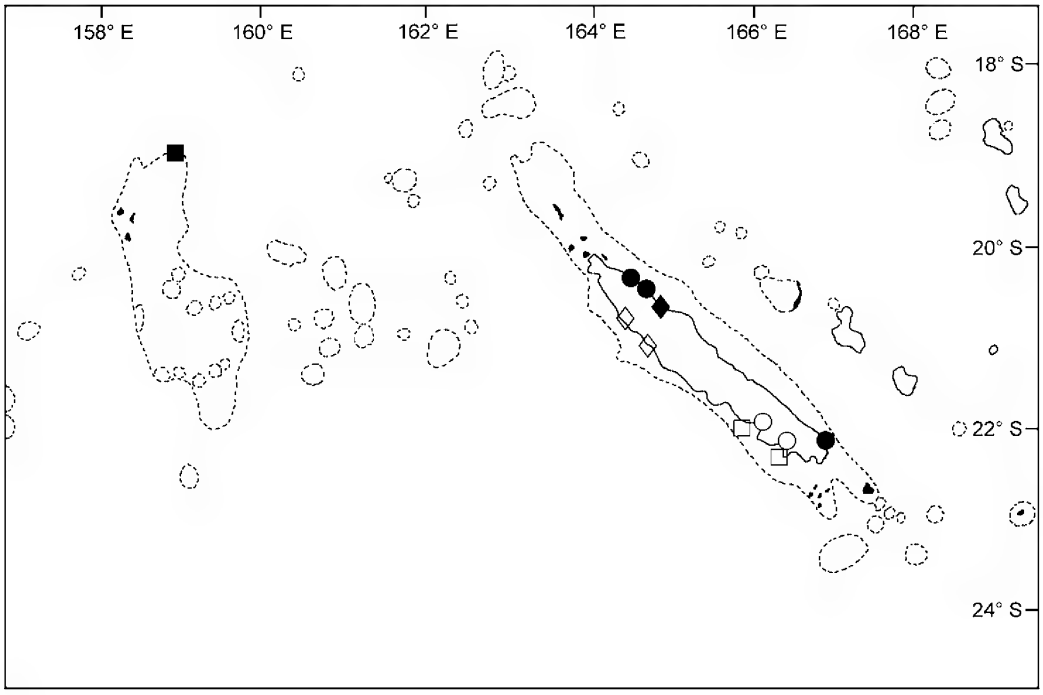

Fig. 24. Geographical distribution of *Microphis argulus* (■), *M. brachyurus* (●), *M. brevidorsalis* (□), *M. cruentus* (○), *M. leiaspis* (◆) and *M. retzii* (◇) in New Caledonian waters.

Distribution

New Caledonia (Grande Terre, **new record**) (Fig. 24). Outside the area, eastern Indonesia east to Palau/Belau, New Guinea, Solomon Islands, and Fiji. This species is found in freshwater streams and rivers, and adjacent estuarine areas.

3.35 *Microphis cruentus* Dawson & Fourmanoir, 1981
Dumbéa River pipefish

Microphis cruentus Dawson & Fourmanoir, 1981: Dawson & Fourmanoir 1981: 114–118, figs. 1–2 (New Caledonia, Dumbéa River/Grande Terre, Trou des Nurses, ca. 8 km upstream from mouth, elevation ca. 8 m, freshwater, depth 2–3 m; holotype: MNHN 1980-1533). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Kuiter 2000: 176, figs. A–B (review; endemic to New Caledonia). – Marquet et al. 2003: 156–157, figs. (Province Sud, Nouvelle-Calédonie/New Caledonia).

Microphis (Microphis) cruentus: Dawson 1985: 135–136 (review; Dumbéa River, Grande Terre, New Caledonia).

Material

Total: 8 specimens.

New Caledonia, Grande Terre, Province Sud: AMS I0.21895-001, 1 specimen, 99 mm SL, paratype of *Microphis cruentus* Dawson & Fourmanoir; same data as the holotype. – GCRL 17000, 1 paratype of *Microphis cruentus* Dawson & Fourmanoir; same data as the holotype. – GCRL 17002, 1 paratype of *Microphis cruentus* Dawson & Fourmanoir; same data as the holotype. – MNHN 1887-0373, 1 specimen, 105 mm SL, paratype of *Microphis cruentus* Dawson & Fourmanoir; Vimont. – MNHN 1980-1533, 130 mm SL, holotype of *Microphis cruentus* Dawson & Fourmanoir; Dumbéa River; P. Laboute & J.-L. Menou; 1980. – MNHN 1990-0706, 2 specimens, 105–113 mm SL; Dumbéa River; P. Laboute; 1980. –

USNM 224025, 1 specimen, paratype of *Microphis cruentus* Dawson & Fourmanoir; Dumbéa River; P. Laboute & J.-L. Menou; 13 Feb. 1980.

Distribution

New Caledonia (Dumbéa and Ouenghi rivers, Province Sud, Grande Terre) (Fig. 24). Endemic to the island. This species is found in freshwater rivers up to an elevation of at least 8 m.

3.36 *Microphis leiaspis* (Bleeker, 1853)

Bud River pipefish

Syngnathus leiaspis Bleeker, 1853: Bleeker 1853b: 20 (Batavia/Jakarta, Java, Indonesia; syntype: RMNH 7252, 1 specimen).
Coelonotus liaspis: Weber & Beaufort 1922: 57–58, fig. 24 (N New Guinea; etc.).
Coelonotus leiaspis: Seale 1935: 354 (Guadalcanar/Guadalcanal, Solomon Islands). – Fowler 1949: 65 (Guadalcanal/Solomon Islands). – Fourmanoir 1971: 112 (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Ryan 1980: 61 (Suva, Sawani/Viti Levu, Fiji; in checklist).
Microphis (Coelonotus) leiaspis: Dawson 1985: 132 (review; Grande Terre, New Caledonia; in distribution map; Solomon Islands; Vanuatu; Fiji; etc.).
Microphis leiaspis: Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Marquet et al. 1997: 29 (Nouvelle-Calédonie/New Caledonia). – Kuiter 2000: 174, figs. A–B (review; West Pacific, Iriomote/Japan and Philippines to Indonesia and east to Fiji; Irian Jaya/Papua, Indonesia). – Marquet et al. 2003: 158–159, figs. (Province Nord, Nouvelle-Calédonie/New Caledonia; distribution; etc.).

Material

Total: 7 specimens.
New Caledonia, Grande Terre, Province Nord: MNHN 1992-1340, 1 specimen; Oue Thaboua River, at Oubatche; B. Séret; 1991. – MNHN 1992-1341, 4 specimens; Hienghène River; B. Séret; 1991. – MNHN 1996-0424, 2 specimens, 125–157 mm SL; Hienghène River; B. Séret; 1991.

Distribution

New Caledonia (Grande Terre) (Fig. 24). Outside the area, Indonesia to Fiji, north to southern Japan. Solomon Islands; Vanuatu. This species is found in streams, rivers, and estuaries (juveniles).

3.37 *Microphis retzii* (Bleeker, 1856)

Retz's pipefish

Syngnathus retzii Bleeker, 1856: Bleeker 1856: 76 (Manado, Celebes/Sulawesi, Indonesia; syntypes in BMNH, NMV, RMNH, ZMA).
Microphis (Lophocampus) retzii: Dawson 1985: 134–135, fig. 201 (review; Solomon Islands; Vanuatu; Fiji; Samoa; etc.).
Microphis retzii: Marquet et al. 2003: 160–161, figs. (Province Nord, Nouvelle-Calédonie/New Caledonia).

Distribution

New Caledonia (Grande Terre) (Fig. 24). Outside the area, eastern Indonesia and Philippines east to Pohnpei/Caroline Islands and Samoa. Solomon Islands; Vanuatu; Fiji. This species usually occurs in freshwater streams and rivers where it is found up to an elevation of 150 m.

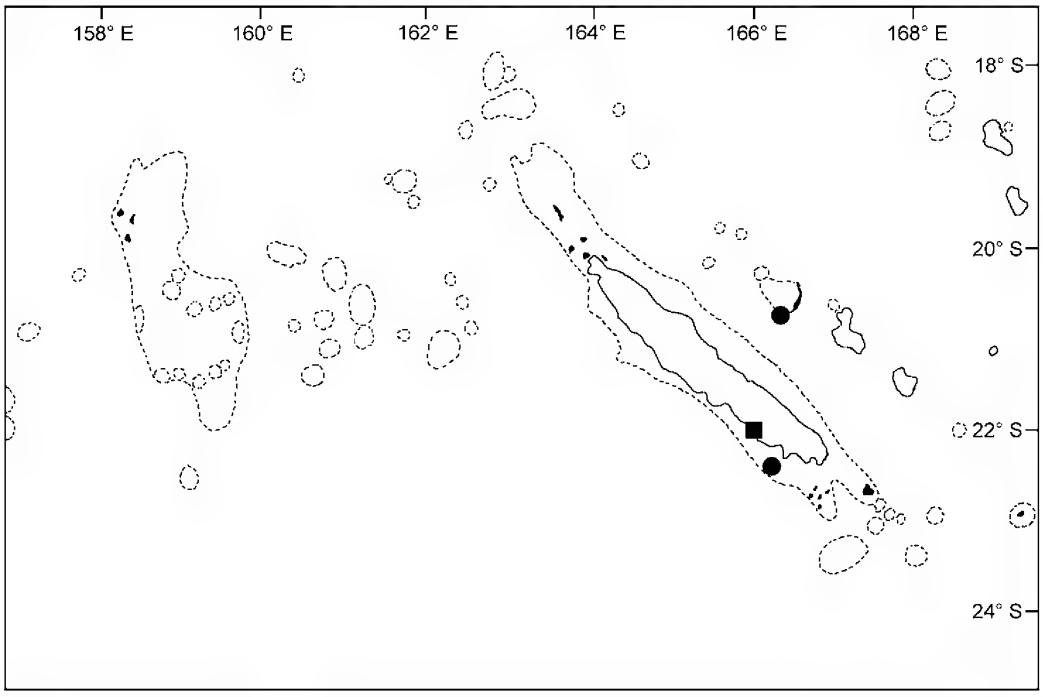

Fig. 25. Geographical distribution of *Phoxocampus belcheri* (■) and *P. diacanthus* (●) in New Caledonian waters.

Remark

No specimens from the area in collections.

3.38 *Phoxocampus belcheri* (Kaup, 1856)

Black rock pipefish

Ichthyocampus belcheri Kaup, 1856: Kaup 1856: 30, pl. 5, fig. 39 [China; lectotype: BMNH 1983.8.18:4, as designated by Dawson (1977b: 616)]. – Plessis & Fourmanoir 1966: 125 (platier récifal, baie de Saint-Vincent, Nouvelle-Calédonie/Grande Terre, New Caledonia).
Phoxocampus belcheri: Dawson 1985: 156, fig. 232 (review; Grande Terre, New Caledonia, in distribution map, fig. 235, p. 158; Solomon Islands; Vanuatu; Fiji; etc.). – Kuiter 2000: 170, figs. (review; widespread Indo-West Pacific).

Distribution

New Caledonia (Grande Terre) (Fig. 25). Outside the area, Red Sea, East and South Africa, Madagascar and Seychelles east to Fiji, north to southern Japan, south to Western Australia. Solomon Islands; Vanuatu. Reported from tide pools to 15 m depth.

Remark

No specimens from the area in collections.

3.39 *Phoxocampus diacanthus* (Schultz, 1943)
Pale-blotched pipefish

Ichthyocampus diacanthus Schultz, 1943: Schultz 1943: 75–76, pl. 8 (reef at Alofau, Tutuila Island, American Samoa; holotype: USNM 116091). – Fowler 1949: 66 (Tutuila/American Samoa).

Phoxocampus diacanthus: Dawson 1985: 156 (review; Grande Terre, New Caledonia, in distribution map, fig. 235, p. 158; Fiji; etc.). – Zug et al. 1989: 15 (Rotuma). – Myers 1999: 94 (New Caledonia; etc.). – Kuiter 2000: 170, fig. (review; widespread West Pacific). – Dunning et al. 2001: 15 (North Queensland/Australia; taken by trawl fishery).

Material

Total: 8 specimens.

New Caledonia, Grande Terre, Province Sud: MNHN 1980-0895, 1 specimen; Île Solitaire; M.-L. Bauchot & L. A. Maugé; 1979. — **Loyalty Islands**: USNM 324001, 2 specimens; Ouvéa Atoll, southern end of lagoon, 20°42′48″S 166°24′00″E, 11 m depth; J. T. Williams, P. Tirard & J.-L. Menou; 13 Nov. 1991.

SW Pacific comparison material. **Tonga**: USNM 334302, 1 specimen; Tongatapu Group, reef just N of Atata Island, N side of reef, 21°01′10″S 125°13′40″W, 11–20 m depth; G. D. Johnson et al.; 28 Oct. 1993. – USNM 334400, 2 specimens; E'ua Island, S of Aonua Harbour, 21°20′15″S 174°58′14″W, 3–13 m depth; J. T. Williams et al.; 2 Nov. 1993. – USNM 338358, 2 specimens; Vava'u Group, Ovaka Island, NW side of island, 18°44′31″S 174°06′36′W, 0.1–10 m depth; J. T. Williams et al.; 17 Nov. 1993.

Distribution

New Caledonia (Grande Terre); Loyalty Islands (Ouvéa) (Fig. 25). Outside the area, Sri Lanka to Marshall Islands and Tonga (**new record**), north to Izu Islands/Japan, south to Queensland/Australia. Rotuma; Samoa. This species is found on shallow protected coral rubble reefs at depths of 0.1–40 m.

3.40 *Siokunichthys herrei* Herald in Schultz et al., 1953
Herre's pipefish

Siokunichthys herrei Herald in Schultz et al., 1953: Herald in Schultz et al. 1953: 254–256, fig. 38 (N end of Siokun Bay, NW Zamboanga Peninsula, Mindanao, Philippine Islands, 7°43′24″N 122°04′42″E; holotype: USNM 112296). – Dawson 1985: 166–167, fig. 246 (Irian Jaya/Papua, Indonesia; Solomon Islands; Fiji; etc.). – Kuiter 2000: 172, figs. A–B (review; Indonesia and Philippines; Fiji).

Material

Total: 12 specimens.

New Caledonia, Grande Terre, Province Nord: IRDNC uncat., 1 specimen, 39.9 mm SL; E lagoon, 21°23′36″S 166°05′12″E, 34–35 m depth; B. Richer de Forges & R/V 'Vauban', Cruise DRAGAGE, St. 708; 10 Aug. 1986. – MNHN 2004-2034, 1 specimen; same data as IRDNC uncat. – SMNS 21782, 2 specimens, 39.9–40.3 mm SL; same data as IRDNC uncat.

SW Pacific comparison material. **Fiji**: AMS I0.20390-011, 1 specimen; Beqa Lagoon. – CAS 5910, 7 paratypes of *Siokunichthys herrei* Herald; Viti Levu.

Distribution

New Caledonia (Grande Terre) (Fig. 26). Outside the area, Philippines and northern Sulawesi/Indonesia south to Papua/Indonesia (former Irian Jaya), east to Solomon Islands and Fiji. All known specimens are small and were collected in the plankton; this may be the juvenile of another species of the same genus before transformation into the benthic living adult stage.

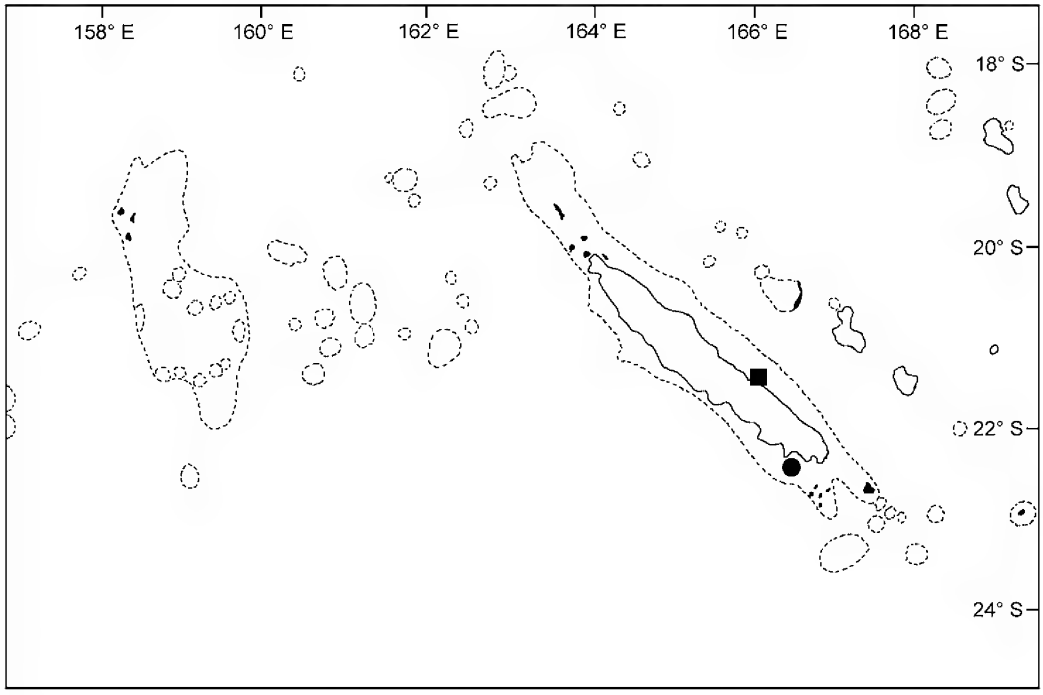

Fig. 26. Geographical distribution of *Siokunichthys herrei* (■) and *S. striatus* n. sp. (●) in New Caledonian waters.

3.41 *Siokunichthys striatus* **n. sp.** (Fig. 27)

New Caledonian soft-coral pipefish

Material

Total: 1 specimen.

Holotype. **New Caledonia, Grande Terre, Province Sud**: MNHN 2004-2035, 1 male, 92.8 mm SL; Sêche Croissant Reef, 22°20′00″S 166°22′18″E, 2 m depth, *Sargassum* on rocky substrate; M. KULBICKI; 30 July 1996.

Etymology

The name of the new species, "*striatus*" (Latin), refers to the striae on the lower parts of the opercle.

Diagnosis

This new species is characterised within the genus *Siokunichthys* by the presence of striae on the ventral portion of the opercle but the absence of a longitudinal ridge on the opercle, dorsal fin rays 26, pectoral fin rays 9–10, trunk rings 14, tail rings 43, subdorsal rings 5.5, dorsal fin origin on 1st tail ring, snout length 2.8 in head length, and snout depth 2.2 in snout length.

Description

D xxvi; P_1 ix–x; C x. Trunk rings 14; tail rings 43; subdorsal rings 0 + 5.5.

Head length 12.4 in SL (8.0 % of SL). Eye diameter 2.2 in snout, 6.1 in head length (1.3 % of SL). Snout length 2.8 in head length (2.8 % of SL). Snout dorsally concave,

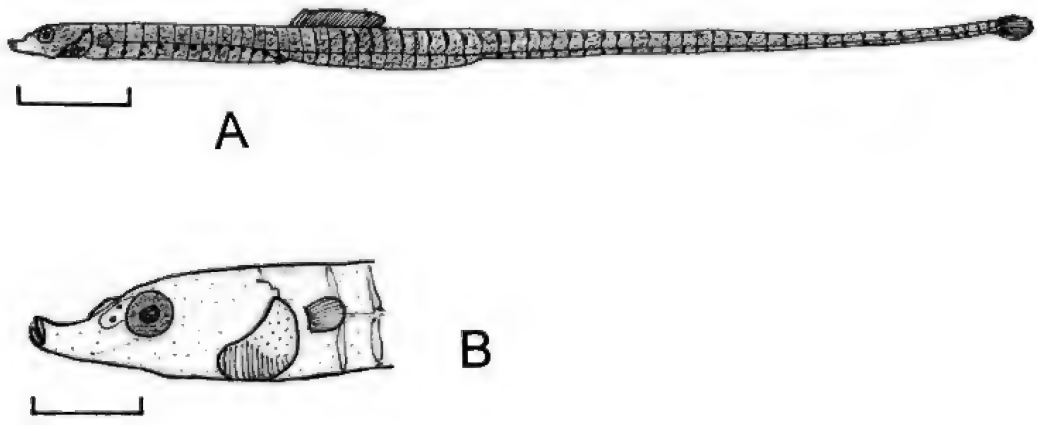

Fig. 27. *Siokunichthys striatus* n. sp.; holotype, MNHN 2004-2035, male, 90.9 mm SL; New Caledonia, Sêche Croissant Reef, 2 m depth. **A.** Lateral view (scale: 10 mm). **B.** Head, lateral view (scale: 3 mm).

with a short elevated snout ridge that ends on anterior part of interorbital. Jaws without odontoid processes. Supraorbital and other median dorsal head ridges ridges vestigial. Snout depth 2.2 in snout length. Dorsal margin of upper jaw not reaching horizontal through dorsal rim of orbit. Opercle without a longitudinal ridge; lower half of opercle with striae (Fig. 27B). Superior trunk and tail ridges confluent, superior ridges not arched dorsad on subdorsal rings. Inferior trunk and tail ridges discontinuous near anal ring. Lateral trunk ridge confluent with inferior tail ridge. Principal body ridges indistinct, the margins entire. Venter of trunk without a prominent median ridge. Anal ring depth 2.7 in head length (3.0 % of SL). Trunk depth 2.4 in head length (3.3 % of SL). Preanus length 3.8 in SL (26.7 % of SL). Brood pouch extending over anterior 13 tail rings. Pouch plates absent; membranous pouch folds present. Body without spines, denticulations or dermal flaps.

Predorsal fin length 3.5 in SL (28.4 % of SL). Dorsal fin beginning on 1st tail ring, ending on 6th tail ring. Dorsal fin base length 0.95 in head length (8.5 % of SL). Anal fin absent. Prepectoral fin length 12.1 in SL (8.2 % of SL). Pectoral fin base not protruding laterad, without ridges. Pectoral fin length 3.8 in head length (28.4 % of SL). Caudal fin length 42.2 in SL (2.4 % of SL).

Colour in alcohol: Snout light, remaining parts of head, trunk and tail dark brown. Eye dark grey. Each trunk ring with a black spot along lateral trunk ridge; anterior 4 trunk rings with a second black blotch below. Tail rings dorsally and ventrally blackish.

Distribution

New Caledonia (Grande Terre) (Fig. 26). This new species is known only from the holotype, which was collected among *Sargassum* on a rocky substrate at 2 m depth.

Comparisons

Siokunichthys striatus n. sp. differs from other species of the genus (except *S. southwelli*) in the presence of striae on the lower half of the opercle. It is distin-

guished from *S. southwelli* by its 14 trunk rings (8 trunk rings in *S. southwelli*), its 26 dorsal fin rays (13–14 dorsal fin rays in *S. southwelli*), and with the dorsal fin origin on 1st tail ring (on 7th tail ring in *S. southwelli*). The new species resembles *S. breviceps* Smith, 1963 sensu lato in its snout length relative to the head length (snout length either much shorter or longer in other species), but differs in the number of pectoral fin rays (9–10 in *S. striatus*, 11–13 in *S. breviceps*), the number of tail rings (43 in *S. striatus*, 56–60 in *S. breviceps*), number of total subdorsal rings (5.5 in *S. striatus*, 7.0–9.0 in *S. breviceps*), the number of dorsal fin rays (26 in *S. striatus*, 27–33 in *S. breviceps*), and the striae on the lower half of the opercle (absent in *S. breviceps*).

Remarks

The genus *Siokunichthys* was revised by Dawson (1983), who distinguished a total of five species [*S. bentuviai* Clark, Clark 1966: 4, figs. 1–2, Red Sea; *S. breviceps* Smith, Smith 1963: 525, pl. 80, figs. j–m, Mozambique; *S. herrei* Herald in Schultz et al., 1953, see above; *S. nigrolineatus* Dawson, Dawson 1983: 58–61, figs. 3–5, Maluku/Indonesia and Philippines; *S. southwelli* (Duncker, 1910), Duncker 1910: 30, figs. b–c, Ceylon/Sri Lanka, as *Urocampus southwelli*], but expected the presence of additional species in the tropical Indo-West Pacific. Species of *Siokunichthys* are usually associated with soft corals; this new species was found in a seagrass bed above rocks, possibly including some soft corals.

3.42 *Syngnathoides biaculeatus* (Bloch, 1785)

Alligator pipefish;
double-ended pipefish, double-ended pipehorse (Australia);
longue-flûte (French, New Caledonia)

Syngnathus biaculeatus Bloch, 1785: Bloch 1785: 10, pl. 121, figs. 1–2 (Ost-Indien/East Indies; syntypes: ZMB 4329, 2 specimens). – Jouan 1863: 177–178 (Port de France/Nouméa, Grande Terre, New Caledonia).

Gastrotokeus biaculeatus: Schmeltz 1874: 38 (Tonga-Inseln/Tonga). – Schmeltz 1879: 61 (Tonga-Inseln/Tonga). – Pöhl 1884: 41 (Tonga). – Günther 1910: 434 (Samoa; etc.). – Duncker 1915: 38–40 (revision; Samoa; etc.).

Syngnathoides biaculeatus: Weber & Beaufort 1922: 40–41, figs. 18–19 (Samoa; etc.). – Fowler 1928: 110 (review; Apia/Upolu, Western Samoa; Pago Pago/Tutuila, American Samoa; Nouméa/New Caledonia; Tonga; etc.). – Fowler 1931: 323 (Samoa; Tonga Islands; etc.). – Fowler 1949: 66 (Apia/Upolu, Western Samoa; etc.). – Dawson 1985: 181 (review; Grande Terre, New Caledonia, in distribution map; Fiji; Tonga; Samoa; etc.). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Blaber et al. 1991: 18 (Munda, Vona Vona and Tulagi/Solomon Islands). – Thollot 1996a: 9 (south-west lagoon of Grande Terre, New Caledonia). – Thollot 1996b: 281 (lagon sud-ouest/SW lagoon, Grande Terre, New Caledonia). – Paulus 1999: 2276, fig. (review; widespread in SW Pacific; etc.; in distribution map; etc.). – Kuiter 2000: 73, figs. A–D (review; widespread in tropical Indo-West Pacific). – Dunning et al. 2001: 15 (Queensland waters/Australia; taken by trawl fishery).

Syngnathoides bioculeatus: Fourmanoir 1971: 112 (Nouvelle-Calédonie/Grande Terre, New Caledonia).

Syngnathoides sp.: Laboute & Grandperrin 2000: 157, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia).

Material

Total: 10 specimens.

New Caledonia, Grande Terre, Province Nord: SMNS 21752, 1 specimen, 102+ mm SL; NW lagoon, 20°43′00″S 164°16′48″E, 10 m depth; B. Richer de Forges & R/V 'Alis', Cruise

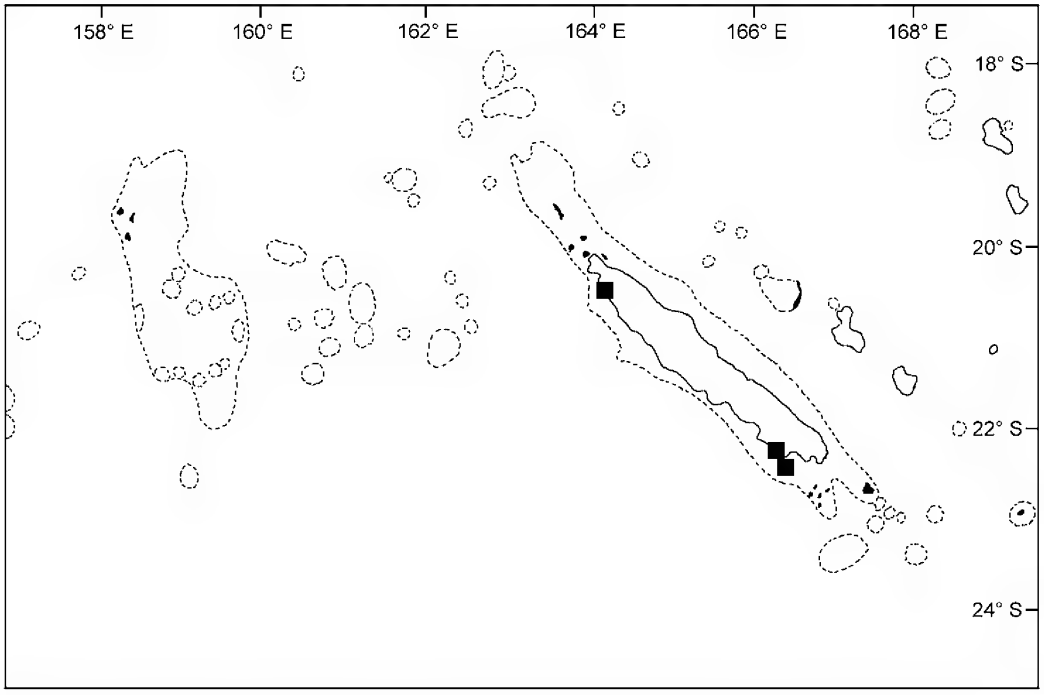

Fig. 28. Geographical distribution of *Syngnathoides biaculeatus* in New Caledonian waters.

CAMPLAG12, St. DW.934; 27 Apr. 1988. — **New Caledonia, Grande Terre, Province Sud**: MNHN 9210, 1 specimen; VINÇON. – MNHN A.0984, 1 specimen; F. L. DE CASTELNAU; 1877. – MNHN A.1816–A.1817, 3 specimens; HEURTEL; 1879. – MNHN A.4878, 1 specimen; GERMAIN; 1882. – MNHN 1980-0405, 1 specimen; P. FOURMANOIR; 1977. – SMNS 21778, 1 specimen, ca. 86.5 mm SL; 22°20′54″S 166°22′12″E, 15 m depth; B. RICHER DE FORGES & R/V 'Vauban', Cruise CAMPLAG1, St. DW.3; 21 May 1984.

SW Pacific comparison material. **Indonesia**: SMNS 10640, 1 specimen, 181.5 mm TL, syntype of *Syngnathoides blochii* Bleeker; Banda/Bandaneira Island, Banda Archipelago, Maluku, 4°32′S 129°54′E; P. BLEEKER; Jan. 1860.

Distribution

New Caledonia (Grande Terre) (Fig. 28). Outside the area, Red Sea, East and South Africa, Madagascar and Mauritius east to Marshall Islands, Samoa and Tonga, north to southern Japan, south to Western Australia and New South Wales/Australia. Solomon Islands; Fiji. This species is found in shallow coastal waters in seagrass beds.

3.43 *Trachyrhamphus bicoarctatus* (Bleeker, 1857)
Bent stick pipefish

Syngnathus bicoarctatus Bleeker, 1857: BLEEKER 1857: 99–100 (Amboina/Ambon Island, Maluku, Indonesia; holotype: RMNH 7237).

?*Syngnathus*: JOUAN 1863: 178 (Saint-Louis, 25 km SE Port de France/Nouméa, Grande Terre, New Caledonia).

Ichthyocampus maculatus: JOUAN 1879: 332 (Nouvelle-Calédonie/Grande Terre, New Caledonia).

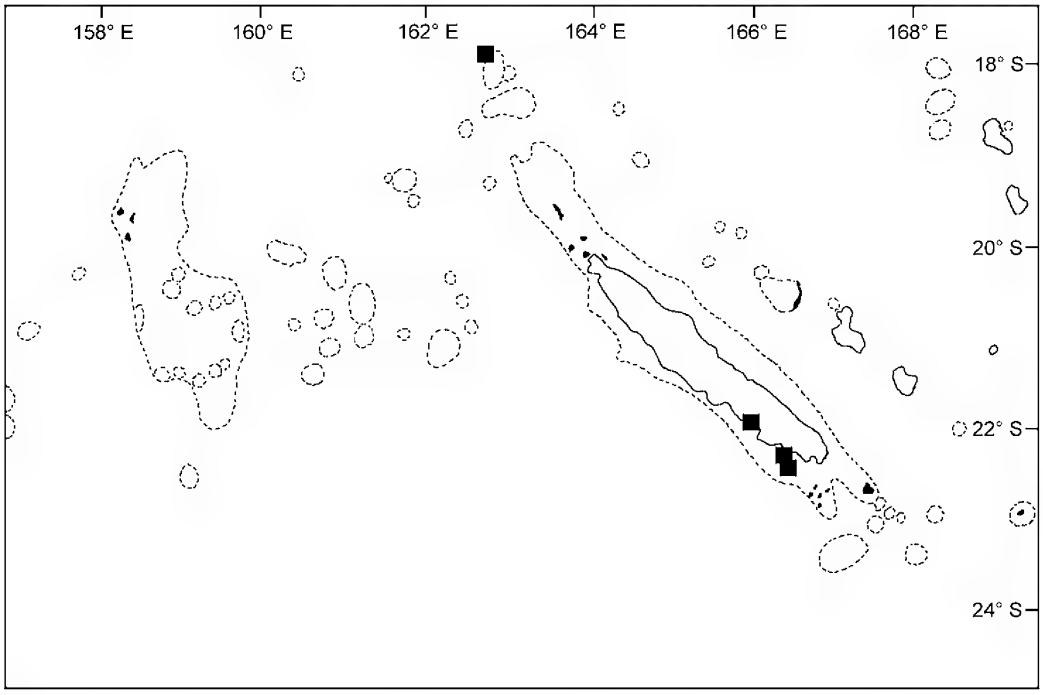

Fig. 29. Geographical distribution of *Trachyrhamphus bicoarctatus* in New Caledonian waters.

Yozia intermedia (non Kaup, 1856): Fourmanoir 1971: 112 (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Fourmanoir & Laboute 1976: 272, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia).

Trachyrhamphus bicoarctatus: Dawson 1982b: 181–188, figs. 7–9 (revision; Queensland, New South Wales/Australia; Samarai Island/Papua New Guinea; Grande Terre/New Caledonia; etc.). – Dawson 1985: 191–192, fig. 280 (review; Grande Terre, New Caledonia, in distribution map, fig. 283, p. 194). – Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Wantiez et al. 1996: 807 (South Bay, St. Vincent Bay/Grande Terre, New Caledonia). – Larson & Williams 1997: 351 (Darwin Harbour, Northern Territory, Australia). – Fricke 1999: 154 (New Caledonia; etc.). – Myers 1999: 95 (New Caledonia; etc.). – Paulus 1999: 2276, fig. (review; SW Pacific; etc.; in distribution map). – Laboute & Grandperrin 2000: 157, fig. (Nouvelle-Calédonie/Grande Terre, New Caledonia). – Dunning et al. 2001: 15 (North Queensland/Australia; taken by trawl fishery).

Trachyrhamphus longirostris (non Kaup, 1856): Rivaton et al. 1989: 74 (Nouvelle-Calédonie/New Caledonia, in checklist). – Rivaton & Bourret 1999: 46 (otolithes; Lagon Nouvelle-Calédonie/Grande Terre, New Caledonia).

Material

Total: 6 specimens.

New Caledonia, Grande Terre, Province Nord: MNHN 2000-5520, 1 specimen; S Grand Passage, 19°07′30″S 163°22′06″E, 110–110 m depth; R/V 'Vauban', Cruise MUSORSTOM 4, St. DW 150; 14 Sep. 1985. – MNHN 2000-5648, 1 specimen; S Grand Passage, 19°07′36″S 163°22′42″E, 165–165 m depth; R/V 'Vauban', Cruise MUSORSTOM 4, St. DW 149; 14 Sep. 1985. — **New Caledonia, Grande Terre, Province Sud**: SMNS 21743, 1 specimen, 227.0 mm SL; Baie de Saint-Vincent, S side, 22°05′30″S 166°05′00″E, 17 m depth; M. Kulbicki & R/V 'Alis'; 19 Dec. 1989. – SMNS 21783, 1 specimen, 150.5 mm SL; 22°20′54″S 166°22′12″E, 15 m depth; B. Richer de Forges & R/V 'Vauban', Cruise CAMPLAG1, St. DW.3; 21 May 1984.

SW Pacific comparison material. **Vanuatu**: MNHN 1997-4153, 2 specimens; off

Lathi Island, Espiritu Santo, 15°03′49″S 167°08′41″E, 208–210 m depth; R/V 'Alis', Cruise MUSORSTOM 8, St. CP 1102; 7 Oct. 1994.

Distribution

New Caledonia (Grande Terre) (Fig. 29). Outside the area, Red Sea, East and South Africa to Mariana Islands and New Caledonia, north to southern Japan, south to southern New South Wales/Australia. Vanuatu (**new record**). This species is known from estuaries, especially sand and mud areas; some are collected in seagrass beds. The species is collected at depths down to 25 m, rarely down to 210 m.

Remarks

KUITER (2000: 126) notes that specimens formerly included under *Trachyrhamphus bicoarctatus* probably comprise several similar species over the area. The eastern Australian form looks different from the typical Indonesian populations and was described as *Yozia compitalis* by WHITLEY (1950). The *Trachyrhamphus-bicoarctatus*-complex is in need of revision.

4 Key to the species of New Caledonian Syngnathidae

1 Distal part of tail not clearly prehensile, not coiled ventrad in preservative; typically without distinct fleshy pads ventrally on distal rings; tail sometimes slender and thread-like **2**
– Distal part of tail clearly prehensile, typically coiled ventrad in preservative; usually with fleshy transverse pads ventrally on distal rings; tail not exceptionally slender or thread-like (except in *Syngnathoides biaculeatus*) **37**
2 Caudal fin present (sometimes minute or rudimentary) **3**
– Caudal fin absent in subadults and adults ..... ***Syngnathoides biaculeatus* (in part)**
3 Superior trunk and tail ridges continuous **4**
– Superior trunk and tail ridges discontinuous **9**
4 Inferior trunk and tail ridges continuous, lateral trunk ridge not confluent with inferior tail ridge **5**
– Inferior trunk and tail ridges discontinuous, lateral trunk ridge confluent with inferior tail ridge **8**
5 Principal tail ridges essentially straight, the posterior angles of tail rings not produced and hook-like **6**
– Principal tail ridges produced laterad, the posterior angles of tail rings usually hook-like **7**
6 Principal tail ridges with a small posterior spine-like projection on each ring; pectoral fin rays 11–14; snout length 2.3–2.6 in head length ..... ***Festucalex kulbickii* n. sp.**
– Principal tail ridges without spine-like projections; pectoral fin rays 16–17; snout length 1.7–1.8 in head length ..... ***Festucalex wassi***
7 Lateral trunk ridge ends on 1st–5th tail ring (usually on 3rd or 4th ring); total rings 45–48 ..... ***Phoxocampus belcheri***
– Lateral trunk ridge ends on 0–1st ring; total rings 40–43 ..... ***Phoxocampus diacanthus***
8 Lower half of opercle with striae; snout long and slender, its length averages 2.4 in head length; tail rings 43 ..... ***Siokunichthys striatus* n. sp.**
– Lower half of opercle without striae; snout shorter and deeper, its length averages 2.8 in head length; tail rings 52–58 ..... ***Siokunichthys herrei***
9 Inferior trunk and tail ridges continuous; lateral trunk ridge variable **10**
– Inferior trunk and tail ridges discontinuous; lateral trunk ridge confluent with inferior tail ridge **19**
10 Lateral snout ridge and dermal flaps absent **11**
– Lateral snout ridge and dermal flaps present ..... ***Cosmocampus banneri***

11 Anal fin rays 2–3; pouch plates present, everted pouch-closure .... *Hippichthys spicifer*
– Anal fin rays 4; pouch plates absent, semi pouch-closure **12**
12 Snout short, its length 2.3–2.5 in head length, its depth 4.6–4.9 in snout length **13**
– Snout longer, its length 1.7–2.1 in head length, its depth 5.3–9.1 in snout length **14**
13 Trunk rings modally 15, without prominent lateral stripes on head; body usually with broad brown bars; tail red in life ..... *Corythoichthys* **sp.**
– Trunk rings modally 16, head with prominent lateral stripes; body with narrow reticulate bars ..... *Corythoichthys conspicillatus*
14 Trunk rings modally 16 (in 96 %) **15**
– Trunk rings modally 17–18 (in 95 %) **18**
15 Snout long and slender, its length 1.7–1.8 in head length, its depth 8.0–9.1 in snout length **16**
– Snout shorter and deeper, its length 2.0–2.1 in head length, its depth 5.3–7.0 in snout length **17**
16 Total rings 48–55 (modally 51); dorsal fin rays average 28; anterior trunk rings ventrally plain or with faint bars, spots or ocelli ..... *Corythoichthys schultzi*
– Total rings 45–48 (modally 46); dorsal fin rays average 23; ventral part of anterior trunk rings usually shaded with dark brown ..... *Corythoichthys ocellatus*
17 Head with prominent stripes or reticulations; anterior trunk rings ventrally spotted, barred or streaked with brown ..... *Corythoichthys intestinalis*
– Head plain or dusky; anterior trunk rings ventrally blackish . *Corythoichthys nigripectus*
18 Trunk rings modally 17 (92 %); anterior trunk rings ventrally plain or with distinct dark brown to black markings ..... *Corythoichthys haematopterus*
– Trunk rings modally 18 (97 %); anterior trunk rings ventrally with diffuse brownish spots or blotches ..... *Corythoichthys paxtoni*
19 Caudal fin rays typically 9 ..... **20**
– Caudal fin rays typically 10 ..... **26**
20 Caudal fin often stubby or rudimentary; trunk rings 21–24, the 1st clearly longer than the 2nd; male brood area under tail ..... *Trachyrhamphus bicoarctatus*
– Caudal fin well developed; trunk rings 15–21, the 1st not much longer than the 2nd; male brood area under trunk **21**
21 Longitudinal opercular ridge usually distinct and complete; lateral and inferior trunk ridges distinct; tail rings 20–33 ..... **23**
– Longitudinal opercular ridge vestigial or absent; lateral and inferior trunk ridges indistinct; tail rings 31–39 ..... **22**
22 Trunk rings usually 16 (97 %); tail rings 36–39; specimens > 100 mm SL with dark spots on pectoral fin base and ocellate spots on side of trunk ..... *Microphis argulus*
– Trunk rings usually 17 (95 %); tail rings 31–34; without dark spots on pectoral fin base or ocelli on trunk ..... *Microphis leiaspis*
23 Opercle with one or more supplemental ridges below the longitudinal ridge; tail rings 21–29 ..... **24**
– Opercle without supplemental ridges below the longitudinal ridge; tail rings 30–33 ..... *Microphis cruentus*
24 Snout relatively long and slender, snout length 1.5–1.8 in head length; trunk rings 20–22; tail rings 21–24; dorsal fin rays 37–47; head length 4.2–5.3 in SL .. *Microphis brachyurus*
– Snout relatively shorter and deeper, snout length 2.2–2.7 in head length; trunk rings 15–17; tail rings 26–31; dorsal fin rays 25–42; head length 7.0–10.7 in SL **25**
25 Dorsal fin rays 25–29 ..... *Microphis brevidorsalis*
– Dorsal fin rays 32–42 ..... *Microphis retzii*
26 First trunk ring much longer than second; pectoral fin typically emarginate; caudal fin large, the membranes broad; dermal flaps absent; male brood area under trunk **27**
– First trunk ring not much longer than second; pectoral fin rounded; caudal fin not large; dermal flaps usually present; male brood area under tail **29**
27 Snout with 1–5 rows of dorsolateral spinules, without banded colour pattern; membranous pouch folds present in brooding males ..... *Doryrhamphus melanopleura*
– Snout without rows of dorsolateral spinules, with banded colour pattern; membranous pouch folds absent in brooding males **28**
28 Total rings 31–33; head length 3.8 in SL; snout depth 8.6 in snout length; two dark bands crossing opercle ..... *Dunckerocampus chapmani*

– Total rings 34–38; head length 4.1–4.9 in SL; snout depth 10.6–13.4 in snout length; one dark band crossing opercle ..... ***Dunckerocampus dactyliophorus***

29 Median dorsal snout ridge low, entire, essentially concave in lateral profile; lateral snout ridge absent; dermal flaps absent **30**

– Median dorsal snout ridge often elevated or spiny, not essentially concave in lateral profile; lateral snout ridge or spine usually present; usually with dermal flaps on eye **33**

30 Snout in head length 6.1–7.0; total subdorsal rings 5.5–7 ..... ***Micrognathus brevicorpus* n. sp.**

– Snout in head length 2.2–3.3; total subdorsal rings 3–5 ..... **31**

31 Trunk rings usually 14 (in 93 %); snout depth 2.9–4.0 (usually > 3.3) in snout length ..... ***Micrognathus natans***

– Trunk rings usually 15–17 (in 99 %); snout depth 1.6–3.1 (usually < 3.0) in snout length **32**

32 Principal ridges of posterior tail rings strongly angled laterad, the posterior angles produced to hook-like points; snout length 3.0–3.1 in head length ... ***Micrognathus pygmaeus***

– Principal ridges of posterior tail rings not angled strongly laterad, without hook-like points; snout length averages 2.6 in head length ..... ***Micrognathus micronotopterus***

33 Median dorsal snout ridge discontinuous, with semi-isolated spines or ridge-like elevations **34**

– Median dorsal snout ridge essentially continuous, sometimes emarginate but without separated spines or ridges **36**

34 Trunk rings usually 14 (in 96 %), margins of superior trunk ridges with spines or serrations **35**

– Trunk rings 15, margins of superior trunk ridges without spines or serrations ..... ***Halicampus mataafae***

35 Tail rings 33–37, dermal flaps simple or branched ..... ***Halicampus spinirostris***

– Tail rings 30–32, dermal flaps simple, flat and somewhat spatulate .. ***Halicampus nitidus***

36 Tail rings 37–42 ..... ***Halicampus boothae***

– Tail rings 31–36 ..... ***Halicampus dunckeri***

37 Lateral trunk ridge confluent with inferior tail ridge **38**

– Lateral trunk ridge confluent with lateral tail ridge .. ***Syngnathoides biaculeatus* (in part)**

38 Head essentially in line with longitudinal axis of body; pouch plates present ..... ***Acentronura breviperula***

– Head clearly angled ventrad (usually > 70°) from longitudinal axis of body; pouch plates absent **39**

39 Pectoral fin rays 10–12; dorsal fin rays 13–15; tail rings 31–33 ... ***Hippocampus bargibanti***

– Pectoral fin rays 13–20; dorsal fin rays 15–19; tail rings 35–37 ..... **40**

40 Trunk rings 11; dorsal rays 15; shoulder ring not confluent over neck ridge, not forming continuous collar **41**

– Trunk rings 13; dorsal rays 17–18; shoulder ring confluent over neck ridge, forming continuous collar ..... ***Hippocampus pusillus* n. sp.**

41 Nose spine large; nape spine large, curved towards coronet, close to coronet; dorsal trunk ridge with large, curved spines; dorsal fin base with long, sharp spines, the central spine longer than dorsal fin rays; anterior coronet spines higher than posterior spines ..... ***Hippocampus curvicuspis* n. sp.**

– Nose spine small or absent; nape spine small, not curved, distant from coronet; dorsal trunk ridge with low bony knobs, at most with small spines; dorsal fin base with small, blunt spines **42**

42 Snout length more than half of head length; tail spiny ..... ***Hippocampus semispinosus***

– Snout length less than half of head length, equals postorbital length; tail not spiny ..... ***Hippocampus taeniopterus***

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